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     (FILE 'HOME' ENTERED AT 10:55:07 ON 08 NOV 2007)

     FILE 'CAPLUS, MEDLINE' ENTERED AT 10:55:27 ON 08 NOV 2007
L1             1 S NERVE DAMAGE (P) HYALURONIC ACID? (P) TETRASACCHARIDE?
L2             0 S NERVE DAMAGE (P) HYALURONIC ACID? (P) OLIGOSACCHARIDE?
L3             0 S NERVE DAMAGE (P) HYALURONIC ACID? (P) TETRAOLIGOSACCHARIDE?
L4             0 S NERVE DAMAGE (P) HYALURONIC ACID? (P) ?OLIGOSACCHARIDE?
L5             1 S NERVE DAMAGE (P) HYALURONIC ACID? (P) ?DISACCHARIDE?
L6             0 S NERVE DAMAGE (P) HYALURONIC ACID? (P) ?SACCHARIDE?  TETRA?
L7             1 S NERVE DAMAGE (P) HYALURONIC ACID? (P) ?SACCHARIDE? (P) TETRA?
L8             1 S NERVE DAMAGE (P) HYALURONATE (P) ?OLIGOSACCHARIDE?
L9             0 S NERVE DAMAGE (P) HYALURONATE (P) ?TETRA?
L10            1 S NERVE (P) HYALURONIC ACID? (P) TETRASACCHARIDE?
L11            6 S NERVE (P) HYALURONIC ACID? (P) OLIGOSACCHARIDE?
L12            2 S NERVE (P) HYALURONIC ACID? (P) ?OLIGOSACCHARIDE? (P) ?TETRA?
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L16            0 S NERVE (P) HYALURONON (P) ?OLIGOSACCHARIDE?
L17            2 S NERVE (P) HYALURONAN (P) ?OLIGOSACCHARIDE?
L18            5 S NERVE (P) HYALURONAN (P) ?SACCHARIDE?
L19            3 S L18 NOT L17
L20            0 S NERVE (P) HYALURONAN (P) ?TETRASACCHARIDE?
L21            0 S NERVE (P) HYALURONAN (P) ?TETRAOLIGOSACCHARIDE?
L22            0 S NERVE (P) HYALURONAN (P) ?TETRA? (P) ?OLIGOSACCHARIDE?
L23            0 S SPINAL CORD INJUR? (P) HYALURONIC ACID? (P) ?SACCHARIDE? (P)
L24            1 S SPINAL CORD INJUR? (P) HYALURONIC ACID? (P) ?SACCHARIDE?
L25            0 S NERVOUS FUNCTION (P) HYALURONIC ACID? (P) ?SACCHARIDE?
L26            0 S DEMYELINATION? (P) HYALURONIC ACID? (P) ?SACCHARIDE?
L27            2 S ?MYELINATION? (P) HYALURONIC ACID? (P) ?SACCHARIDE?
L28           27 S ?EDEMA? (P) HYALURONIC ACID? (P) ?SACCHARIDE?
L29           17 S EDEMA? (P) HYALURONIC ACID? (P) ?SACCHARIDE?
L30            0 S L29 AND WHITE MATTER?
L31           10 S L28 NOT L29
L32            0 S PREPARATION (P) HYALURONIC ACID? (P) ?TETRASACCHARIDE?
L33            0 S MANUFACT? (P) HYALURONIC ACID? (P) ?TETRASACCHARIDE?
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L36            1 S SOLUTION? (P) HYALURONIC ACID? (P) ?TETRASACCHARIDE?
L37            1 S HYALURONIC ACID? (P) ?TETRASACCHARIDE?  (P) PHARMA?
L38           39 S HYALURONIC ACID? (S) ?TETRASACCHARIDE?
L39            1 S L38 AND SOLUTION?
L40      3724010 S L#* NOT L39
L41           38 S L38 NOT L39
L42            0 S L41 AND SOLVENT?
L43            0 S L41 AND AQUEOUS
L44            0 S L41 AND ETHANOL
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L1 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:817718 CAPLUS
DOCUMENT NUMBER: 141:307584
TITLE: Remedy for nerve damage containing glucuronic acid and/or N-acetylglucosamine-containing low-molecular weight saccharides
INVENTOR(S): Kato, Tadahiko; Asari, Akira
PATENT ASSIGNEE(S): Seikagaku Corporation, Japan
SOURCE: PCT Int. Appl., 36 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004084912	A1	20041007	WO 2004-JP4240	20040325
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2004224510	A1	20041007	AU 2004-224510	20040325
CA 2519797	A1	20041007	CA 2004-2519797	20040325
EP 1611893	A1	20060104	EP 2004-723399	20040325
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
CN 1794999	A	20060628	CN 2004-80014299	20040325
US 2006135439	A1	20060622	US 2005-550998	20051024

PRIORITY APPLN. INFO.: JP 2003-83831 A 20030325
WO 2004-JP4240 W 20040325

AB It is intended to provide a remedy for nerve damage caused by spinal injury, nerve trauma or the like which contains, as the active ingredient, a low-mol. weight saccharide at least having glucuronic acid and/or N-acetylglucosamine as the constituting sugar(s) or a pharmaceutically acceptable salt thereof. Preferably, a remedy for nerve damage which contains, as the active ingredient, a low-mol. weight hyaluronic acid (still preferably hyaluronic acid disaccharide to hyaluronic acid 2500-saccharide, still preferably hyaluronic acid disaccharide to hyaluronic acid 50-saccharide, particularly preferably hyaluronic acid tetrasaccharide) or a pharmaceutically acceptable salt thereof. The effect of hyaluronic acid tetrasaccharide (HA4) in spiral injury model rats was examined

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:817718 CAPLUS
DOCUMENT NUMBER: 141:307584
TITLE: Remedy for nerve damage containing glucuronic acid and/or N-acetylglucosamine-containing low-molecular weight saccharides
INVENTOR(S): Kato, Tadahiko; Asari, Akira
PATENT ASSIGNEE(S): Seikagaku Corporation, Japan
SOURCE: PCT Int. Appl., 36 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004084912	A1	20041007	WO 2004-JP4240	20040325
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2004224510	A1	20041007	AU 2004-224510	20040325
CA 2519797	A1	20041007	CA 2004-2519797	20040325
EP 1611893	A1	20060104	EP 2004-723399	20040325
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
CN 1794999	A	20060628	CN 2004-80014299	20040325
US 2006135439	A1	20060622	US 2005-550998	20051024
PRIORITY APPLN. INFO.:			JP 2003-83831 A	20030325
			WO 2004-JP4240 W	20040325

AB It is intended to provide a remedy for nerve damage caused by spinal injury, nerve trauma or the like which contains, as the active ingredient, a low-mol. weight saccharide at least having glucuronic acid and/or N-acetylglucosamine as the constituting sugar(s) or a pharmaceutically acceptable salt thereof. Preferably, a remedy for nerve damage which contains, as the active ingredient, a low-mol. weight hyaluronic acid (still preferably hyaluronic acid disaccharide to hyaluronic acid 2500-saccharide, still preferably hyaluronic acid disaccharide to hyaluronic acid 50-saccharide, particularly preferably hyaluronic acid tetrasaccharide) or a pharmaceutically acceptable salt thereof. The effect of hyaluronic acid tetrasaccharide (HA4) in spiral injury model rats was examined
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:817718 CAPLUS
DOCUMENT NUMBER: 141:307584
TITLE: Remedy for nerve damage containing glucuronic acid and/or N-acetylglucosamine-containing low-molecular weight saccharides
INVENTOR(S): Kato, Tadahiko; Asari, Akira
PATENT ASSIGNEE(S): Seikagaku Corporation, Japan
SOURCE: PCT Int. Appl., 36 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004084912	A1	20041007	WO 2004-JP4240	20040325
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2004224510	A1	20041007	AU 2004-224510	20040325
CA 2519797	A1	20041007	CA 2004-2519797	20040325
EP 1611893	A1	20060104	EP 2004-723399	20040325
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
CN 1794999	A	20060628	CN 2004-80014299	20040325
US 2006135439	A1	20060622	US 2005-550998	20051024
PRIORITY APPLN. INFO.:			JP 2003-83831 A	20030325
			WO 2004-JP4240 W	20040325

AB It is intended to provide a remedy for nerve damage caused by spinal injury, nerve trauma or the like which contains, as the active ingredient, a low-mol. weight saccharide at least having glucuronic acid and/or N-acetylglucosamine as the constituting sugar(s) or a pharmaceutically acceptable salt thereof. Preferably, a remedy for nerve damage which contains, as the active ingredient, a low-mol. weight hyaluronic acid (still preferably hyaluronic acid disaccharide to hyaluronic acid 2500-saccharide, still preferably hyaluronic acid disaccharide to hyaluronic acid 50-saccharide, particularly preferably hyaluronic acid tetrasaccharide) or a pharmaceutically acceptable salt thereof. The effect of hyaluronic acid tetrasaccharide (HA4) in spiral injury model rats was examined
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1994:431669 CAPLUS
DOCUMENT NUMBER: 121:31669
TITLE: Identification of Gal(β1-3)GalNAc bearing glycoproteins at the nodes of Ranvier in peripheral nerve
AUTHOR(S): Apostolski, S.; Sadiq, S. A.; Hays, A.; Corbo, M.; Suturkova-Milosevic, L.; Chaliff, P.; Stefansson, K.; LeBaron, R. G.; Ruoslahti, E.; et al.
CORPORATE SOURCE: Coll. Physicians and Surgeons, Columbia Univ., New York, NY, USA
SOURCE: Journal of Neuroscience Research (1994), 38(2), 134-41
CODEN: JNREDK; ISSN: 0360-4012
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A subset of human anti-GM1 ganglioside antibodies cross-reacts with Gal(β1-3)GalNAc bearing glycoproteins in peripheral nerve and spinal cord. The same oligosaccharide determinant is recognized by the lectin peanut agglutinin (PNA) which binds at the nodes of Ranvier in intact peripheral nerve. The Gal(β1-3)GalNAc bearing glycoproteins were isolated using PNA lectin affinity chromatog. followed by separation on Western blot, and the proteins were subjected to partial amino acid sequence anal. Two major PNA binding glycoproteins were identified in peripheral nerve and spinal cord; one had an approx. mol. weight of 120 kD and had sequence homol. to the oligodendrocyte-myelin glycoprotein (OMgp). The other migrated between 70 and 80 kD and had sequence homol. to the hyaluronate binding domain of versican, which has been reported to share sequence homol. with the 70 kD proteins hyaluronectin and the glial hyaluronic acid binding protein (GHAP). By immunocytochem., OMgp was localized to the paranodal region of myelin, and the protein homologous to the hyaluronate binding domain of versican was localized to the nodal gap in peripheral nerve. These PNA binding glycoproteins might be target antigens for autoantibodies in peripheral nerve.

L11 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1992:443788 CAPLUS
DOCUMENT NUMBER: 117:43788
TITLE: Ultrastructural localization of hyaluronan in myelin sheaths of the rat central and rat and human peripheral nervous systems using hyaluronan-binding protein-gold and link protein-gold
AUTHOR(S): Eggli, P. S.; Lucocq, J.; Ott, P.; Graber, W.; Van der Zypen, E.
CORPORATE SOURCE: Inst. Anat., Univ. Bern, Bern, 3012, Switz.
SOURCE: Neuroscience (Oxford, United Kingdom) (1992), 48(3), 737-44
CODEN: NRSCDN; ISSN: 0306-4522
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Neural tissue of central (rat spinal cord) and peripheral origin (rat sciatic nerve, nerve fascicles of rat skin and iris and of human conjunctiva) was processed by osmium tetroxide/microwave fixation and embedded in epoxy resin. Hyaluronan-binding proteins and link proteins coupled to 15-20-nm gold particles were used as markers in a one-step post-embedding procedure for identifying hyaluronan (hyaluronic acid) at the ultrastructural level. All myelin sheaths in both rat and human material were found to be intensely labeled. The specificity of the hyaluronan-binding probes was demonstrated by the total loss of labeling following treatment of sections with hyaluronidase or by preincubating either the probes with hyaluronan oligosaccharides or the sections with unlabeled hyaluronan-binding protein. The identified hyaluronan appears to be located extracellularly,

but its precise role here remains to be elucidated.

L11 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:19571 CAPLUS
DOCUMENT NUMBER: 108:19571
TITLE: Complex carbohydrate composition of large dense-cored vesicles from sympathetic nerve
AUTHOR(S): Margolis, R. U.; Ledeen, R. W.; Sbaschnig-Agler, M.; Byrne, M. C.; Klein, R. L.; Douglas, B. H., II; Margolis, R. K.
CORPORATE SOURCE: Med. Cent., New York Univ., New York, NY, 10016, USA
SOURCE: Journal of Neurochemistry (1987), 49(6), 1839-44
CODEN: JONRA9; ISSN: 0022-3042
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Highly purified noradrenergic, large, dense-cored vesicles were isolated from bovine sympathetic nerve endings by sucrose-D2O d. gradient centrifugation. Their concentration of glycoprotein hexosamine and sialic acid was 6.6 and 3.9 μmol/100 mg lipid-free dry weight, resp. However, whereas chromaffin granule glycoproteins are characterized by their high proportion of N-acetylgalactosamine-containing O-glycosidically-linked oligosaccharides (present in the chromogranins), such oligosaccharides accounted for only 17% of those in noradrenergic synaptic vesicle glycoproteins. Fractionation of N-3H-acetylated glycopeptides by sequential lectin affinity chromatog. demonstrated that .apprx.66% of the oligosaccharides were of the tri- and tetraantennary complex type, accompanied by 14% biantennary oligosaccharides and 3% high-mannose oligosaccharides. The vesicles had a relatively low concentration of chondroitin sulfate (<5% of that in chromaffin granules) but significant amts. of heparan sulfate (0.4 μmol N-acetylglucosamine/100 mg lipid-free dry weight). No hyaluronic acid was detected. The concentration of ganglioside sialic acid in the noradrenergic vesicles was .apprx.1 μmol/100 mg lipid-free dry weight; the ratio of N-acetyl- to N-glycolylneuraminic acid was 0.8. Several mol. species of gangliosides were detected by thin-layer chromatog., but most of these did not exactly comigrate with bovine brain gangliosides. Cholera toxin binding indicated that .apprx.50% or less of the gangliosides belong to the gangliotetraose series.

L11 ANSWER 4 OF 6 MEDLINE on STN
ACCESSION NUMBER: 94358912 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8078098
TITLE: Identification of Gal(beta 1-3)GalNAc bearing glycoproteins at the nodes of Ranvier in peripheral nerve.
AUTHOR: Apostolski S; Sadiq S A; Hays A; Corbo M; Suturkova-Milosevic L; Chaliff P; Stefansson K; LeBaron R G; Ruoslahti E; Hays A P; +
CORPORATE SOURCE: Department of Neurology, Columbia Presbyterian Medical Center, College of Physicians and Surgeons, Columbia University, New York, New York 10032.
CONTRACT NUMBER: 3PO1 NS 11766 (NINDS)
SOURCE: Journal of neuroscience research, (1994 Jun 1) Vol. 38, No. 2, pp. 134-41.
Journal code: 7600111. ISSN: 0360-4012.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199410
ENTRY DATE: Entered STN: 13 Oct 1994
Last Updated on STN: 6 Feb 1998
Entered Medline: 3 Oct 1994

AB A subset of human anti-GM1 ganglioside antibodies cross-reacts with Gal(beta 1-3)GalNAc bearing glycoproteins in peripheral nerve and spinal cord. The same oligosaccharide determinant is recognized by the lectin peanut agglutinin (PNA) which binds at the nodes of Ranvier in intact peripheral nerve. The Gal(beta 1-3)GalNAc bearing glycoproteins were isolated using PNA lectin affinity chromatography followed by separation on Western blot, and the proteins were subjected to partial amino acid sequence analysis. Two major PNA binding glycoproteins were identified in peripheral nerve and spinal cord; one had an approximate molecular weight of 120 kD and had sequence homology to the oligodendrocyte-myelin glycoprotein (OMgp). The other migrated between 70 and 80 kD and had sequence homology to the hyaluronate binding domain of versican, which has been reported to share sequence homology with the 70 kD proteins hyaluronectin and the glial hyaluronic acid binding protein (GHAP). By immunocytochemistry, OMgp was localized to the paranodal region of myelin, and the protein homologous to the hyaluronate binding domain of versican was localized to the nodal gap in peripheral nerve. These PNA binding glycoproteins might be target antigens for autoantibodies in peripheral nerve.

L11 ANSWER 5 OF 6 MEDLINE on STN
ACCESSION NUMBER: 92293528 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1376458
TITLE: Ultrastructural localization of hyaluronan in myelin sheaths of the rat central and rat and human peripheral nervous systems using hyaluronan-binding protein-gold and link protein-gold.
AUTHOR: Eggli P S; Lucocq J; Ott P; Graber W; van der Zypen E
CORPORATE SOURCE: Institute of Anatomy, University of Bern, Switzerland.
SOURCE: Neuroscience, (1992) Vol. 48, No. 3, pp. 737-44.
Journal code: 7605074. ISSN: 0306-4522.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199207
ENTRY DATE: Entered STN: 24 Jul 1992
Last Updated on STN: 29 Jan 1999
Entered Medline: 16 Jul 1992

AB Neural tissue of central (rat spinal cord) and peripheral origin (rat sciatic nerve, nerve fascicles of rat skin and iris and of human conjunctiva) was processed by osmium tetroxide/microwave fixation and embedded in epoxy resin. Hyaluronan-binding proteins and link proteins coupled to 15-20-nm gold particles were used as markers in a one-step post-embedding procedure for identifying hyaluronan (hyaluronic acid) at the ultrastructural level. All myelin sheaths in both rat and human material were found to be intensely labelled. The specificity of the hyaluronan-binding probes was demonstrated by the total loss of labelling following treatment of sections with hyaluronidase or by preincubating either the probes with hyaluronan oligosaccharides or the sections with unlabelled hyaluronan-binding protein. The identified hyaluronan appears to be located extracellularly, but is precise role here remains to be elucidated.

L11 ANSWER 6 OF 6 MEDLINE on STN
ACCESSION NUMBER: 88061355 MEDLINE
DOCUMENT NUMBER: PubMed ID: 3681300
TITLE: Complex carbohydrate composition of large dense-cored vesicles from sympathetic nerve.
AUTHOR: Margolis R U; Ledeen R W; Sbaschnig-Agler M; Byrne M C; Klein R L; Douglas B H 2nd; Margolis R K

CORPORATE SOURCE: Department of Pharmacology, New York University Medical Center, New York 10016.
CONTRACT NUMBER: NS-04834 (NINDS)
NS-09348 (NINDS)
NS-13876 (NINDS)
SOURCE: Journal of neurochemistry, (1987 Dec) Vol. 49, No. 6, pp. 1839-44.
Journal code: 2985190R. ISSN: 0022-3042.
PUB. COUNTRY: United States
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198712
ENTRY DATE: Entered STN: 5 Mar 1990
Last Updated on STN: 3 Feb 1997
Entered Medline: 23 Dec 1987

AB Highly purified noradrenergic, large, dense-cored vesicles were isolated from bovine sympathetic nerve endings by sucrose-D2O density gradient centrifugation. Their concentration of glycoprotein hexosamine and sialic acid was 6.6 and 3.9 mumol/100 mg lipid-free dry weight, respectively, values which are similar to those previously found in bovine chromaffin granules. However, whereas chromaffin granule glycoproteins are characterized by their high proportion of N-acetylgalactosamine-containing O-glycosidically-linked oligosaccharides (present in the chromogranins), such oligosaccharides accounted for only 17% of those in noradrenergic synaptic vesicle glycoproteins. Fractionation of N-3H-acetylated glycopeptides by sequential lectin affinity chromatography demonstrated that approximately two-thirds of the oligosaccharides were of the tri- and tetraantennary complex type, accompanied by 14% biantennary oligosaccharides and 3% high-mannose oligosaccharides. The vesicles had a relatively low concentration of chondroitin sulfate (less than 5% of that in chromaffin granules) but significant amounts of heparan sulfate (0.4 mumol N-acetylglucosamine/100 mg lipid-free dry weight). No hyaluronic acid was detected. The concentration of ganglioside sialic acid in the noradrenergic vesicles was approximately 1 mumol/100 mg lipid-free dry weight, which is significantly higher than that of a crude membrane mixture from which the vesicles were prepared; the ratio of N-acetyl- to N-glycolylneuraminic acid was 0.8. Several molecular species of gangliosides were detected by thin-layer chromatography, but most of these did not exactly comigrate with bovine brain gangliosides. Cholera toxin binding indicated that approximately half or less of the gangliosides belong to the gangliotetraose series.

L12 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:19571 CAPLUS
DOCUMENT NUMBER: 108:19571
TITLE: Complex carbohydrate composition of large dense-cored vesicles from sympathetic nerve
AUTHOR(S): Margolis, R. U.; Ledeen, R. W.; Sbaschnig-Agler, M.; Byrne, M. C.; Klein, R. L.; Douglas, B. H., II; Margolis, R. K.
CORPORATE SOURCE: Med. Cent., New York Univ., New York, NY, 10016, USA
SOURCE: Journal of Neurochemistry (1987), 49(6), 1839-44
CODEN: JONRA9; ISSN: 0022-3042
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Highly purified noradrenergic, large, dense-cored vesicles were isolated from bovine sympathetic nerve endings by sucrose-D2O d. gradient centrifugation. Their concentration of glycoprotein hexosamine and sialic acid was 6.6 and 3.9 μmol/100 mg lipid-free dry weight, resp. However, whereas chromaffin granule glycoproteins are characterized by their high proportion of N-acetylgalactosamine-containing O-glycosidically-linked oligosaccharides (present in the chromogranins), such oligosaccharides accounted for only 17% of those in noradrenergic synaptic vesicle glycoproteins. Fractionation of N-3H-acetylated glycopeptides by sequential lectin affinity chromatog. demonstrated that .apprx.66% of the oligosaccharides were of the tri- and tetraantennary complex type, accompanied by 14% biantennary oligosaccharides and 3% high-mannose oligosaccharides. The vesicles had a relatively low concentration of chondroitin sulfate (<5% of that in chromaffin granules) but significant amts. of heparan sulfate (0.4 μmol N-acetylglucosamine/100 mg lipid-free dry weight). No hyaluronic acid was detected. The concentration of ganglioside sialic acid in the noradrenergic vesicles was .apprx.1 μmol/100 mg lipid-free dry weight; the ratio of N-acetyl- to N-glycolylneuraminic acid was 0.8. Several mol. species of gangliosides were detected by thin-layer chromatog., but most of these did not exactly comigrate with bovine brain gangliosides. Cholera toxin binding indicated that .apprx.50% or less of the gangliosides belong to the gangliotetraose series.

L12 ANSWER 2 OF 2 MEDLINE on STN
ACCESSION NUMBER: 88061355 MEDLINE
DOCUMENT NUMBER: PubMed ID: 3681300
TITLE: Complex carbohydrate composition of large dense-cored vesicles from sympathetic nerve.
AUTHOR: Margolis R U; Ledeen R W; Sbaschnig-Agler M; Byrne M C; Klein R L; Douglas B H 2nd; Margolis R K
CORPORATE SOURCE: Department of Pharmacology, New York University Medical Center, New York 10016.
CONTRACT NUMBER: NS-04834 (NINDS)
NS-09348 (NINDS)
NS-13876 (NINDS)
SOURCE: Journal of neurochemistry, (1987 Dec) Vol. 49, No. 6, pp. 1839-44.
Journal code: 2985190R. ISSN: 0022-3042.
PUB. COUNTRY: United States
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198712
ENTRY DATE: Entered STN: 5 Mar 1990
Last Updated on STN: 3 Feb 1997
Entered Medline: 23 Dec 1987
AB Highly purified noradrenergic, large, dense-cored vesicles were isolated

from bovine sympathetic nerve endings by sucrose-D2O density gradient centrifugation. Their concentration of glycoprotein hexosamine and sialic acid was 6.6 and 3.9 mumol/100 mg lipid-free dry weight, respectively, values which are similar to those previously found in bovine chromaffin granules. However, whereas chromaffin granule glycoproteins are characterized by their high proportion of N-acetylgalactosamine-containing O-glycosidically-linked oligosaccharides (present in the chromogranins), such oligosaccharides accounted for only 17% of those in noradrenergic synaptic vesicle glycoproteins. Fractionation of N-3H-acetylated glycopeptides by sequential lectin affinity chromatography demonstrated that approximately two-thirds of the oligosaccharides were of the tri- and tetraantennary complex type, accompanied by 14% biantennary oligosaccharides and 3% high-mannose oligosaccharides. The vesicles had a relatively low concentration of chondroitin sulfate (less than 5% of that in chromaffin granules) but significant amounts of heparan sulfate (0.4 mumol N-acetylglucosamine/100 mg lipid-free dry weight). No hyaluronic acid was detected. The concentration of ganglioside sialic acid in the noradrenergic vesicles was approximately 1 mumol/100 mg lipid-free dry weight, which is significantly higher than that of a crude membrane mixture from which the vesicles were prepared; the ratio of N-acetyl- to N-glycolylneuraminic acid was 0.8. Several molecular species of gangliosides were detected by thin-layer chromatography, but most of these did not exactly comigrate with bovine brain gangliosides. Cholera toxin binding indicated that approximately half or less of the gangliosides belong to the gangliotetraose series.

L13 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:817718 CAPLUS
DOCUMENT NUMBER: 141:307584
TITLE: Remedy for nerve damage containing glucuronic acid and/or N-acetylglucosamine-containing low-molecular weight saccharides
INVENTOR(S): Kato, Tadahiko; Asari, Akira
PATENT ASSIGNEE(S): Seikagaku Corporation, Japan
SOURCE: PCT Int. Appl., 36 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004084912	A1	20041007	WO 2004-JP4240	20040325
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2004224510	A1	20041007	AU 2004-224510	20040325
CA 2519797	A1	20041007	CA 2004-2519797	20040325
EP 1611893	A1	20060104	EP 2004-723399	20040325
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
CN 1794999	A	20060628	CN 2004-80014299	20040325
US 2006135439	A1	20060622	US 2005-550998	20051024
PRIORITY APPLN. INFO.:			JP 2003-83831 A	20030325
			WO 2004-JP4240 W	20040325

AB It is intended to provide a remedy for nerve damage caused by spinal injury, nerve trauma or the like which contains, as the active ingredient, a low-mol. weight saccharide at least having glucuronic acid and/or N-acetylglucosamine as the constituting sugar(s) or a pharmaceutically acceptable salt thereof. Preferably, a remedy for nerve damage which contains, as the active ingredient, a low-mol. weight hyaluronic acid (still preferably hyaluronic acid disaccharide to hyaluronic acid 2500-saccharide, still preferably hyaluronic acid disaccharide to hyaluronic acid 50-saccharide, particularly preferably hyaluronic acid tetrasaccharide) or a pharmaceutically acceptable salt thereof. The effect of hyaluronic acid tetrasaccharide (HA4) in spiral injury model rats was examined
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:19571 CAPLUS
DOCUMENT NUMBER: 108:19571
TITLE: Complex carbohydrate composition of large dense-cored vesicles from sympathetic nerve
AUTHOR(S): Margolis, R. U.; Ledeen, R. W.; Sbaschnig-Agler, M.; Byrne, M. C.; Klein, R. L.; Douglas, B. H., II;

Margolis, R. K.
CORPORATE SOURCE: Med. Cent., New York Univ., New York, NY, 10016, USA
SOURCE: Journal of Neurochemistry (1987), 49(6), 1839-44
CODEN: JONRA9; ISSN: 0022-3042
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Highly purified noradrenergic, large, dense-cored vesicles were isolated from bovine sympathetic nerve endings by sucrose-D2O d. gradient centrifugation. Their concentration of glycoprotein hexosamine and sialic acid was 6.6 and 3.9 μmol/100 mg lipid-free dry weight, resp. However, whereas chromaffin granule glycoproteins are characterized by their high proportion of N-acetylgalactosamine-containing O-glycosidically-linked oligosaccharides (present in the chromogranins), such oligosaccharides accounted for only 17% of those in noradrenergic synaptic vesicle glycoproteins. Fractionation of N-3H-acetylated glycopeptides by sequential lectin affinity chromatog. demonstrated that .apprx.66% of the oligosaccharides were of the tri- and tetraantennary complex type, accompanied by 14% biantennary oligosaccharides and 3% high-mannose oligosaccharides. The vesicles had a relatively low concentration of chondroitin sulfate (<5% of that in chromaffin granules) but significant amts. of heparan sulfate (0.4 μmol N-acetylglucosamine/100 mg lipid-free dry weight). No hyaluronic acid was detected. The concentration of ganglioside sialic acid in the noradrenergic vesicles was .apprx.1 μmol/100 mg lipid-free dry weight; the ratio of N-acetyl- to N-glycolylneuraminic acid was 0.8. Several mol. species of gangliosides were detected by thin-layer chromatog., but most of these did not exactly comigrate with bovine brain gangliosides. Cholera toxin binding indicated that .apprx.50% or less of the gangliosides belong to the gangliotetraose series.

L13 ANSWER 3 OF 3 MEDLINE on STN
ACCESSION NUMBER: 88061355 MEDLINE
DOCUMENT NUMBER: PubMed ID: 3681300
TITLE: Complex carbohydrate composition of large dense-cored vesicles from sympathetic nerve.
AUTHOR: Margolis R U; Ledeen R W; Sbaschnig-Agler M; Byrne M C; Klein R L; Douglas B H 2nd; Margolis R K
CORPORATE SOURCE: Department of Pharmacology, New York University Medical Center, New York 10016.
CONTRACT NUMBER: NS-04834 (NINDS)
NS-09348 (NINDS)
NS-13876 (NINDS)
SOURCE: Journal of neurochemistry, (1987 Dec) Vol. 49, No. 6, pp. 1839-44.
Journal code: 2985190R. ISSN: 0022-3042.
PUB. COUNTRY: United States
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198712
ENTRY DATE: Entered STN: 5 Mar 1990
Last Updated on STN: 3 Feb 1997
Entered Medline: 23 Dec 1987

AB Highly purified noradrenergic, large, dense-cored vesicles were isolated from bovine sympathetic nerve endings by sucrose-D2O density gradient centrifugation. Their concentration of glycoprotein hexosamine and sialic acid was 6.6 and 3.9 mumol/100 mg lipid-free dry weight, respectively, values which are similar to those previously found in bovine chromaffin granules. However, whereas chromaffin granule glycoproteins are characterized by their high proportion of N-acetylgalactosamine-containing O-glycosidically-linked oligosaccharides (present in the chromogranins), such oligosaccharides accounted for only 17%

of those in noradrenergic synaptic vesicle glycoproteins. Fractionation of N-3H-acetylated glycopeptides by sequential lectin affinity chromatography demonstrated that approximately two-thirds of the oligosaccharides were of the tri- and tetraantennary complex type, accompanied by 14% biantennary oligosaccharides and 3% high-mannose oligosaccharides. The vesicles had a relatively low concentration of chondroitin sulfate (less than 5% of that in chromaffin granules) but significant amounts of heparan sulfate (0.4 mumol N-acetylglucosamine/100 mg lipid-free dry weight). No hyaluronic acid was detected. The concentration of ganglioside sialic acid in the noradrenergic vesicles was approximately 1 mumol/100 mg lipid-free dry weight, which is significantly higher than that of a crude membrane mixture from which the vesicles were prepared; the ratio of N-acetyl- to N-glycolylneuraminic acid was 0.8. Several molecular species of gangliosides were detected by thin-layer chromatography, but most of these did not exactly comigrate with bovine brain gangliosides. Cholera toxin binding indicated that approximately half or less of the gangliosides belong to the gangliotetraose series.

L15 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:817718 CAPLUS
DOCUMENT NUMBER: 141:307584
TITLE: Remedy for nerve damage containing glucuronic acid and/or N-acetylglucosamine-containing low-molecular weight saccharides
INVENTOR(S): Kato, Tadahiko; Asari, Akira
PATENT ASSIGNEE(S): Seikagaku Corporation, Japan
SOURCE: PCT Int. Appl., 36 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004084912	A1	20041007	WO 2004-JP4240	20040325
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2004224510	A1	20041007	AU 2004-224510	20040325
CA 2519797	A1	20041007	CA 2004-2519797	20040325
EP 1611893	A1	20060104	EP 2004-723399	20040325
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
CN 1794999	A	20060628	CN 2004-80014299	20040325
US 2006135439	A1	20060622	US 2005-550998	20051024

PRIORITY APPLN. INFO.: JP 2003-83831 A 20030325
WO 2004-JP4240 W 20040325

AB It is intended to provide a remedy for nerve damage caused by spinal injury, nerve trauma or the like which contains, as the active ingredient, a low-mol. weight saccharide at least having glucuronic acid and/or N-acetylglucosamine as the constituting sugar(s) or a pharmaceutically acceptable salt thereof. Preferably, a remedy for nerve damage which contains, as the active ingredient, a low-mol. weight hyaluronic acid (still preferably hyaluronic acid disaccharide to hyaluronic acid 2500-saccharide, still preferably hyaluronic acid disaccharide to hyaluronic acid 50-saccharide, particularly preferably hyaluronic acid tetrasaccharide) or a pharmaceutically acceptable salt thereof. The effect of hyaluronic acid tetrasaccharide (HA4) in spiral injury model rats was examined

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1994:431669 CAPLUS
DOCUMENT NUMBER: 121:31669
TITLE: Identification of Gal(β1-3)GalNAc bearing glycoproteins at the nodes of Ranvier in peripheral nerve
AUTHOR(S): Apostolski, S.; Sadiq, S. A.; Hays, A.; Corbo, M.; Suturkova-Milosevic, L.; Chaliff, P.; Stefansson, K.; LeBaron, R. G.; Ruoslahti, E.; et al.
CORPORATE SOURCE: Coll. Physicians and Surgeons, Columbia Univ., New

York, NY, USA
SOURCE: Journal of Neuroscience Research (1994), 38(2), 134-41
CODEN: JNREDK; ISSN: 0360-4012
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A subset of human anti-GM1 ganglioside antibodies cross-reacts with Gal(β1-3)GalNAc bearing glycoproteins in peripheral nerve and spinal cord. The same oligosaccharide determinant is recognized by the lectin peanut agglutinin (PNA) which binds at the nodes of Ranvier in intact peripheral nerve. The Gal(β1-3)GalNAc bearing glycoproteins were isolated using PNA lectin affinity chromatog. followed by separation on Western blot, and the proteins were subjected to partial amino acid sequence anal. Two major PNA binding glycoproteins were identified in peripheral nerve and spinal cord; one had an approx. mol. weight of 120 kD and had sequence homol. to the oligodendrocyte-myelin glycoprotein (OMgp). The other migrated between 70 and 80 kD and had sequence homol. to the hyaluronate binding domain of versican, which has been reported to share sequence homol. with the 70 kD proteins hyaluronectin and the glial hyaluronic acid binding protein (GHAP). By immunocytochem., OMgp was localized to the paranodal region of myelin, and the protein homologous to the hyaluronate binding domain of versican was localized to the nodal gap in peripheral nerve. These PNA binding glycoproteins might be target antigens for autoantibodies in peripheral nerve.

L15 ANSWER 3 OF 3 MEDLINE on STN
ACCESSION NUMBER: 94358912 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8078098
TITLE: Identification of Gal(beta 1-3)GalNAc bearing glycoproteins at the nodes of Ranvier in peripheral nerve.
AUTHOR: Apostolski S; Sadiq S A; Hays A; Corbo M; Suturkova-Milosevic L; Chaliff P; Stefansson K; LeBaron R G; Ruoslahti E; Hays A P; +
CORPORATE SOURCE: Department of Neurology, Columbia Presbyterian Medical Center, College of Physicians and Surgeons, Columbia University, New York, New York 10032.
CONTRACT NUMBER: 3PO1 NS 11766 (NINDS)
SOURCE: Journal of neuroscience research, (1994 Jun 1) Vol. 38, No. 2, pp. 134-41.
Journal code: 7600111. ISSN: 0360-4012.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199410
ENTRY DATE: Entered STN: 13 Oct 1994
Last Updated on STN: 6 Feb 1998
Entered Medline: 3 Oct 1994

AB A subset of human anti-GM1 ganglioside antibodies cross-reacts with Gal(beta 1-3)GalNAc bearing glycoproteins in peripheral nerve and spinal cord. The same oligosaccharide determinant is recognized by the lectin peanut agglutinin (PNA) which binds at the nodes of Ranvier in intact peripheral nerve. The Gal(beta 1-3)GalNAc bearing glycoproteins were isolated using PNA lectin affinity chromatography followed by separation on Western blot, and the proteins were subjected to partial amino acid sequence analysis. Two major PNA binding glycoproteins were identified in peripheral nerve and spinal cord; one had an approximate molecular weight of 120 kD and had sequence homology to the oligodendrocyte-myelin glycoprotein (OMgp). The other migrated between 70 and 80 kD and had sequence homology to the hyaluronate binding domain of versican, which has been reported to share sequence homology with the 70 kD proteins hyaluronectin and the

glial hyaluronic acid binding protein (GHAP). By immunocytochemistry, OMgp was localized to the paranodal region of myelin, and the protein homologous to the hyaluronate binding domain of versican was localized to the nodal gap in peripheral nerve. These PNA binding glycoproteins might be target antigens for autoantibodies in peripheral nerve.

L17 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1992:443788 CAPLUS
DOCUMENT NUMBER: 117:43788
TITLE: Ultrastructural localization of hyaluronan in myelin sheaths of the rat central and rat and human peripheral nervous systems using hyaluronan-binding protein-gold and link protein-gold
AUTHOR(S): Eggli, P. S.; Lucocq, J.; Ott, P.; Graber, W.; Van der Zypen, E.
CORPORATE SOURCE: Inst. Anat., Univ. Bern, Bern, 3012, Switz.
SOURCE: Neuroscience (Oxford, United Kingdom) (1992), 48(3), 737-44
CODEN: NRSCDN; ISSN: 0306-4522
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Neural tissue of central (rat spinal cord) and peripheral origin (rat sciatic nerve, nerve fascicles of rat skin and iris and of human conjunctiva) was processed by osmium tetroxide/microwave fixation and embedded in epoxy resin. Hyaluronan-binding proteins and link proteins coupled to 15-20-nm gold particles were used as markers in a one-step post-embedding procedure for identifying hyaluronan (hyaluronic acid) at the ultrastructural level. All myelin sheaths in both rat and human material were found to be intensely labeled. The specificity of the hyaluronan-binding probes was demonstrated by the total loss of labeling following treatment of sections with hyaluronidase or by preincubating either the probes with hyaluronan oligosaccharides or the sections with unlabeled hyaluronan-binding protein. The identified hyaluronan appears to be located extracellularly, but its precise role here remains to be elucidated.

L17 ANSWER 2 OF 2 MEDLINE on STN
ACCESSION NUMBER: 92293528 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1376458
TITLE: Ultrastructural localization of hyaluronan in myelin sheaths of the rat central and rat and human peripheral nervous systems using hyaluronan-binding protein-gold and link protein-gold.
AUTHOR: Eggli P S; Lucocq J; Ott P; Graber W; van der Zypen E
CORPORATE SOURCE: Institute of Anatomy, University of Bern, Switzerland.
SOURCE: Neuroscience, (1992) Vol. 48, No. 3, pp. 737-44.
Journal code: 7605074. ISSN: 0306-4522.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199207
ENTRY DATE: Entered STN: 24 Jul 1992
Last Updated on STN: 29 Jan 1999
Entered Medline: 16 Jul 1992
AB Neural tissue of central (rat spinal cord) and peripheral origin (rat sciatic nerve, nerve fascicles of rat skin and iris and of human conjunctiva) was processed by osmium tetroxide/microwave fixation and embedded in epoxy resin. Hyaluronan-binding proteins and link proteins coupled to 15-20-nm gold particles were used as markers in a one-step post-embedding procedure for identifying hyaluronan (hyaluronic acid) at the ultrastructural level. All myelin sheaths in both rat and human material were found to be intensely labelled. The specificity of the hyaluronan-binding probes was demonstrated by the total loss of labelling following treatment of sections with hyaluronidase or by preincubating either the probes with hyaluronan oligosaccharides or the sections with

unlabelled hyaluronan-binding protein.. The identified hyaluronan appears to be located extracellularly, but is precise role here remains to be elucidated.

L19 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:1027010 CAPLUS
DOCUMENT NUMBER: 143:321134
TITLE: Cloning, recombinant expression, characterization, and analytical and therapeutic uses of chondroitinase ABC I from Proteus vulgaris
INVENTOR(S): Prabhakar, Vikas; Capila, Ishan; Raman, Rahul; Bosques, Carlos; Pojasek, Kevin; Sasisekharan, Ram
PATENT ASSIGNEE(S): Massachusetts Institute of Technology, USA
SOURCE: PCT Int. Appl., 243 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005087920	A2	20050922	WO 2005-US8194	20050310
WO 2005087920	A3	20060202		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2558984	A1	20050922	CA 2005-2558984	20050310
US 2006078959	A1	20060413	US 2005-78915	20050310
EP 1737954	A2	20070103	EP 2005-735137	20050310
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR				
US 2007148157	A1	20070628	US 2006-638178	20061213
US 2007148740	A1	20070628	US 2006-638318	20061213
US 2007202563	A1	20070830	US 2006-638094	20061213
US 2007224670	A1	20070927	US 2006-638287	20061213
PRIORITY APPLN. INFO.:			US 2004-552232P	P 20040310
			US 2004-578917P	P 20040610
			US 2004-625052P	P 20041103
			US 2005-78915	A3 20050310
			WO 2005-US8194	W 20050310

AB The invention relates to chondroitinase ABC I and uses thereof. In particular, the invention relates to recombinant and modified chondroitinase ABC I from Proteus vulgaris, their production and their uses. The sub-cloning of the chondroitinase ABC I from P. vulgaris and its recombinant expression in E. coli are described. This recombinant chondroitinase ABC I was also examined biochem., providing the first conclusive evidence of the residues that constitute the enzyme active site. By coupling kinetic anal. of site-directed mutants of the active site amino acids with the construction of theor. enzyme-substrate structural complexes to interpret the effects of the mutants, the detailed roles of the 4 active site amino acids (His501, Tyr508, Glu653, and Arg560) have been outlined. The chondroitinase ABC I enzymes of the invention are useful for a variety of purposes, including degrading and analyzing polysaccharides such as glycosaminoglycans (GAGs). These GAGs can include chondroitin sulfate, dermatan sulfate, unsulfated chondroitin and hyaluronan. The chondroitinase ABC I enzymes can also be used in therapeutic methods such as promoting nerve regeneration, promoting stroke recovery, treating spinal cord injury,

treating epithelial disease, treating infections and treating cancer.

L19 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:876110 CAPLUS
DOCUMENT NUMBER: 138:201108
TITLE: Modification of electroactive biomaterials for neural engineering applications
AUTHOR(S): Schmidt, Christine; Rivers, Tyrell; Hudson, Terry; Collier, Joel
CORPORATE SOURCE: Biomedical Engineering Program, The University or Texas at Austin, Austin, TX, 78712-1084, USA
SOURCE: ACS Symposium Series (2003), 832(Conducting Polymers and Polymer Electrolytes), 154-165
CODEN: ACSMC8; ISSN: 0097-6156
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review. New tissue engineering technologies will rely increasingly more on interactive biomaterials that can both phys. support tissue growth and stimulate specific cell functions. In our research, we have focused on a biomaterial with elec. properties (i.e., the elec. conducting polymer, polypyrrole) that has been shown to improve the regeneration of several tissues including nerve. We have modified polypyrrole for tissue engineering applications by either incorporating biol. mols. that can specifically trigger desired cellular responses (e.g., the formation of new blood vessels), or by adding unique linkage sites within the polypyrrole backbone to control its degradation and mech. integrity. To this end, we are synthesizing two distinct materials:. (1) Composites of polypyrrole and the polysaccharide hyaluronan which stimulates angiogenesis as it degrades; and. (2) Conducting pyrrole oligomers of three units in length connected using degradable ester linkages. These materials are promising candidates for tissue engineering applications, such as nerve repair, that may benefit from elec. stimulation and/or enhanced vascularization.
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 3 OF 3 MEDLINE on STN
ACCESSION NUMBER: 2005164084 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15794840
TITLE: Reduction of postoperative perineural adhesions by Hyaloglide gel: an experimental study in the rat sciatic nerve.
AUTHOR: Dam-Hieu Phong; Lacroix Catherine; Said Gerard; Devanz Pauline; Liu Song; Tadie Marc
CORPORATE SOURCE: Experimental Neurosurgery Laboratory, Centre Hospitalier Universitaire de Bicetre, Faculte de Medecine Paris-Sud, Le Kremlin-Bicetre, France.. phong.damhieu@chu-brest.fr
SOURCE: Neurosurgery, (2005 Apr) Vol. 56, No. 2 Suppl, pp. 425-33; discussion 425-33.
Journal code: 7802914. E-ISSN: 1524-4040.
PUB. COUNTRY: United States
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200603
ENTRY DATE: Entered STN: 31 Mar 2005
Last Updated on STN: 14 Dec 2005
Entered Medline: 31 Mar 2006
AB OBJECTIVE: To assess the effects of Hyaloglide gel (or auto-cross-linked polysaccharide [ACP] gel; Fidia Advanced Biopolymers, Abano Terme, Italy), a hyaluronan-derivative polymer, on peripheral

nerve scarring and nerve regeneration. METHODS: We performed two surgical procedures in adult rats: 1) neurolysis of the sciatic nerve and separation of its tibial and peroneal branches, and 2) transection and immediate suture of the sciatic nerve. After nerve manipulation, ACP gel was applied onto the site of operation. We tested two solutions of ACP gel having different viscosities. Additional animals received Adcon-T/N (Gliatech, Inc., Cleveland, OH), an antiadhesive agent currently available for clinical use. No gel was applied on the contralateral side, which served as a control side. Four weeks later, the animals underwent reoperation. We assessed the quality of wound healing, the presence of perineural adherences, and the separability of nerves from surrounding tissues. RESULTS: Significantly fewer perineural adhesions were found in animals treated with ACP gel (high viscosity) and Adcon-T/N compared with controls. Quantitative histological analysis revealed a statistically significant reduction in the amount of scar tissue surrounding the nerves treated with ACP gel. No evidence of toxicity was found, and the gel did not interfere with nerve regeneration (counts of regenerating myelinated axons). CONCLUSION: ACP gel with high viscosity seems to be safe and effective in reducing perineural adhesions and scar formation after peripheral nerve surgery.

L24 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2007:1223808 CAPLUS
TITLE: Directed Evolution of Chondroitin Lyases
AUTHOR(S): Olsen, Mark J.; Gil, Daniel V.; Harper, Andrew D.; Paredes, Dalila; Combs, Steven A.
CORPORATE SOURCE: Department of Math., Chemistry, and Physics, West Texas A&M University, Canyon, TX, 79015, USA
SOURCE: Abstracts, 63rd Southwest Regional Meeting of the American Chemical Society, Lubbock, TX, United States, November 4-7 (2007), GEN-187. American Chemical Society: Washington, D. C.
CODEN: 69JZIT
DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English

AB Chondroitin lyases are galactosaminoglycan generalist enzymes that can have broad selectivities for the cleavage of chondroitin sulfate A (CS-A), dermatan sulfate (DS), chondroitin sulfate C (CS-C), and related polysaccharides such as hyaluronic acid. Modification of the substrate selectivity, thermostability, and pH profile would enable the use of these enzymes for the preparation and characterization of pharmacol. active oligosaccharides, and may be directly useful as therapeutics in applications ranging from metastatic cancer to spinal cord injury. A number of chondroitin lyases, including Chondroitinase AC, Chondroitinase B, and Chondroitinase ABC have been cloned into a yeast cell surface display vector, and all three enzymes have been verified to display functionally on the surface of Saccharomyces cerevisiae. High, medium, and low throughput assays have been developed for protein anal., including determination of protein expression by flow cytometry using c-myc tag expression, a UV/vis assay using the dye dimethylmethylene blue for detection of catalytic activity, and product anal. by capillary electrophoresis. A high throughput catalytic flow cytometry based assay is currently in development. Random and computationally based library generation strategies have been evaluated for the directed evolution of specific, desirable properties, including differential DS sulfation pattern recognition, and novel, thermostable, pH optimized chondroitinase variants for the treatment of spinal cord injury. The combination of directed evolution methods with site directed mutagenesis strategies are complementary, and are expected to provide new tools for the study of complex sulfated galactosaminoglycans.

L27 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1981:44770 CAPLUS
DOCUMENT NUMBER: 94:44770
TITLE: Acid mucopolysaccharides and myelin development
AUTHOR(S): Rusic, M.; Levental, M.; Rakic, L.
CORPORATE SOURCE: Dep. Neurochem., Inst. Biol. Res., Belgrade, Yugoslavia
SOURCE: Circ. Dev. Aspects Brain Metab., Proc. Int. Symp. Pathophysiol. Cereb. Energy Metab., 2nd (1980), Meeting Date 1979, 311-21. Editor(s): Spatz, Maria; Mrsulja, B. B.; Rakic, Lj. M. Plenum: New York, N. Y. CODEN: 44UAAC
DOCUMENT TYPE: Conference
LANGUAGE: English
AB The presence of acid mucopolysaccharides (AMPS) and their changes during development and myelination were studied in the purified myelin fraction of rat brain. Myelin contained a high concentration of AMPS on the 14th postnatal day (3.7 ng/g dry myelin), but the levels steadily decreased, reaching 0.38 mg/g at day 28. By day 114, the AMPS concentration of the total brain homogenate was 3-fold lower than that of day 14, whereas that of myelin was 10-11-fold lower. The concns. of individual AMPS differed in myelin as opposed to whole brain homogenates. Hyaluronic acid was higher in myelin (12-27%) than in total brain (6-15%). The heparitin sulfate concentration varied little during development in the whole brain, but in myelin underwent a rapid decrease and stabilized in adulthood. Chondroitin sulfate A and C had higher concns. in total brain than in myelin itself, with similar changes during aging. Repetitive electroconvulsive shocks immediately altered the amount of AMPS in the 75-day-old rat brain myelin, which recovers only at 72 h after the last electroconvulsive seizure. Due to the dramatic changes in AMPS concns. in development, there is probably a close relation between brain maturation and AMPS synthesis.

L27 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1965:433898 CAPLUS
DOCUMENT NUMBER: 63:33898
ORIGINAL REFERENCE NO.: 63:6088b-d
TITLE: The distribution and variation with age of different uronic acid-containing mucopolysaccharides in brain
AUTHOR(S): Singh, Manoranjan; Bachawat, B. K.
CORPORATE SOURCE: Christian Med. Coll., Vellore, India
SOURCE: Journal of Neurochemistry (1965), 12(6), 519-25 CODEN: JONRA9; ISSN: 0022-3042
DOCUMENT TYPE: Journal
LANGUAGE: English
AB New data were obtained on the distribution of the title mucopolysaccharides (I) in 15 anatomical regions of sheep brain. In general, regions characterized by white matter were higher in hyaluronic acid (II) than in sulfated mucopolysaccharides; in the gray matter the sulfated mucopolysaccharides were higher than II. The choroid plexus had the highest concentration of chondroitin sulfates but lacked II. The I of sheep brain were mainly composed of II and chondroitin 4-sulfate, plus smaller amts. of heparin, chondroitin 6-sulfate, and a hyaluronidase-resistant material which was either dermatan sulfate or heparan sulfate, or both. Changes in I were also studied in the brains of rats of different ages. At birth, the I were quite high, with a gradual decrease until the weaning period, after which the I fell to a lower value which remained constant in the adults. The level of II was high at birth as well as during the premyelination period. The concentration of chondroitin sulfate

increased and reached a peak at the time that myelination began, then remained steady during the period of active myelination. Concns. of both II and chondroitin sulfate were comparatively low during the postmyelination period and in the adults. The physiol. significance of the results was interpreted in relation to previous reports. 18 references.

L29 ANSWER 9 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1970:1481 CAPLUS
DOCUMENT NUMBER: 72:1481
ORIGINAL REFERENCE NO.: 72:263a
TITLE: Histochemical changes during the menstrual cycle
AUTHOR(S): Nepomnyashchikh, L. M.; Pchelkina, I. B.; Tsitsorina, T. N.; Rodionov, N. E.
CORPORATE SOURCE: Novosibirsk. Med. Inst., Novosibirsk, USSR
SOURCE: Gistokhim. Norm. Patol. Morfol. (1967), 30-5. Editor(s): Subbotin, M. Ya. Izd. "Nauka" Sib. Otd. CODEN: 21IUA3
DOCUMENT TYPE: Conference
LANGUAGE: Russian
AB Histochem. investigation of endometrium was carried out in 18 women with regular cycle. Small glycogen and few large neutral mucopolysaccharide granules were found in the cytoplasma of endometrial cells during the proliferative stage, stromal cells and basal substance contained chondroitin-sulfate C and hyaluronic acid. The content of glycogen, glycoproteins, and mucoproteins increased in epithelial cells during late proliferation and early secretion stages, while acid mucopolysaccharides in the stroma decreased. Neutral mucopolysaccharides were detected in the secretions of endometrial glands. The end of the cycle was characterized by a decrease in glycogen and further increase in mucoproteins and glycoproteins in cells of the spongy layer of endometrium and by a depolymn. of mucopolysaccharides in basal substance with resulting edema. Acid mucopolysaccharides were accumulated in the stroma of basal layer. Glycogen, glycoproteins, and mucoproteins are involved in trophic processes of proliferation, depolymn. of mucopolysaccharides is linked with the increase of vascular permeability at the end of cycle.

L29 ANSWER 10 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1969:427732 CAPLUS
DOCUMENT NUMBER: 71:27732
ORIGINAL REFERENCE NO.: 71:5109a,5112a
TITLE: Reaction of myocardial stroma in epinephrine injuries to the heart
AUTHOR(S): Tsellarius, Yu. G.; Semenova, L. A.
CORPORATE SOURCE: Inst. Tsitol. Genet., Novosibirsk, USSR
SOURCE: Soedin. Tkan Norme Patol., Mater. Soveshch. (1968), Meeting Date 1966, 368-76. Editor(s): Tustanovskii, A. A. Izd. "Nauka" Sib. Otd.: Novosibirsk, USSR. CODEN: 20ZIAD
DOCUMENT TYPE: Conference
LANGUAGE: Russian
AB Cytolysis and contraction of myofibrils were observed histol. in myocardial muscle cells of rats after a single s.c. injection of 0.5 ml. of 0.1% epinephrine solution These lesions may be reversible, and colliquation or coagulation necrosis may take place only in a part of damaged cells. Myocytolytic lesions provoke in the stroma a diffuse reaction affecting some local connective tissue elements. During the 1st hrs. a desmolytic effect can be observed, manifested in stroma edema and in the disappearance of reaction to acid mucopolysaccharides. It may be presumably connected with the action of enzymes released from the damaged cells. Qual. histochem. investigation showed that mainly hyaluronic acid and to a lesser degree chondroitin sulfates A and C are formed during primary diffuse reaction and during the stroma reaction around the seats of colliquation necrosis.

L29 ANSWER 11 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1965:457073 CAPLUS

DOCUMENT NUMBER: 63:57073
ORIGINAL REFERENCE NO.: 63:10450h,10451a
TITLE: Acid mucopolysaccharides in atherosclerosis
AUTHOR(S): Takeuchi, Mutsuya; Kimoto, Eiji; Tanaka, Yukio
CORPORATE SOURCE: Univ. School Med., Kurume, Japan
SOURCE: Kurume Medical Journal (1964), 11(3), 107-21
CODEN: KRMJAC; ISSN: 0023-5679
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Aging of aortic tissue appears to be characterized by a decline of total acid mucopolysaccharide content in Me2CO-dried tissue, decreases in hyaluronic acid and chondroitin sulfate A or C contents, and an increase in chondroitin sulfate B content, similar to the changes observed in aging skin or cartilage. The edematous lesions (perhaps an early phase of fibrous plaque) have high contents of acid mucopolysaccharide and hyaluronic acid. The destruction of abnormal aggregation of acid mucopolysaccharides in the ground substance might cause an increased permeability of the arterial wall to the circulating lipoprotein and also the destruction of connective tissue fibers, thus substantially inducing the atherosclerosis. 64 references.

L29 ANSWER 12 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1965:448691 CAPLUS
DOCUMENT NUMBER: 63:48691
ORIGINAL REFERENCE NO.: 63:8871f-h
TITLE: Histochemistry of vascular walls in rheumatic disease
AUTHOR(S): Mitin, K. S.
CORPORATE SOURCE: First Moscow Med. Inst.
SOURCE: Tr. 1-go [Pervogo] Mosk. Med. Inst. (1963), 22, 31-51
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB Sections of aorta, the coronary, cerebral, renal, and other arteries from 20 fatal rheumatic cases, age 10-52, were examined by a combination of staining, treatment with enzymes, and methylation. During the early stage of the rheumatic process an increase in the amount of acid polysaccharides occurs within the vascular wall. Owing to the hydrophilic property of these substances, hydration of the tissues leads to the morphologic picture of diffuse edema and swelling. At this stage it was possible to identify chondroitinsulfates A, B, and C, as well as hyaluronic acid, some of which seemed to be depolymerized. At an early stage of this mucoid phase metachromasia did not develop at the expense of disorganization of fibrillar structures. The next step in the development of rheumatic lesions was the phase of fibrinoid changes, during which there were foci of the disorganization processes associated with deeper dystrophic alterations of tissue structure. There were focal changes in the ground substance with a disorganization of collagen, resulting in the formation of pathol. fibrinoid lesions with participation of proteins from tissue fluid and serum as well. Here, the cellular reaction is of a resorptive character, and is more pronounced in the zones of disorganization and the fibrinoid foci. 37 references A. A.

L29 ANSWER 13 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1962:438898 CAPLUS
DOCUMENT NUMBER: 57:38898
ORIGINAL REFERENCE NO.: 57:7808a-b
TITLE: Histochemical peculiarities of carbohydrate metabolism in experimental hypothyroidism
AUTHOR(S): Leites, F. L.
CORPORATE SOURCE: Ministry of Health, Moscow
SOURCE: Byulleten Eksperimental'noi Biologii i Meditsiny (1962), 53(No. 5), 50-5
CODEN: BEBMAE; ISSN: 0365-9615
DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

AB Hypothyroidism in rats, induced by 6-methylthiouracil, caused an increase of glycogen level in the parenchyma of the liver and the heart. Glycogen level in heart muscle was nonuniform and it appeared as large nodes or loci with edematous surroundings. Interstitial tissue of the internal organs contained accumulations of mucopolysaccharides, being mainly hyaluronic acid in the heart and chondroitin sulfate in the kidney. Mucoprotein accumulations were seen in blood plasma and in the lymph.

L29 ANSWER 14 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1960:45509 CAPLUS
DOCUMENT NUMBER: 54:45509
ORIGINAL REFERENCE NO.: 54:9018h-i,9019a-c
TITLE: Acid mucopolysaccharides of the sexual skin of apes and monkeys
AUTHOR(S): Rienits, K. G.
CORPORATE SOURCE: Univ. Birmingham, UK
SOURCE: Biochemical Journal (1960), 74, 27-38
CODEN: BIJOAK; ISSN: 0264-6021
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB An examination was made of the mucoprotein present in the exudates of edematous sexual skins of rhesus monkeys (Macaca mulatta), pig-tail monkeys (Macaca nemestrina), and baboons (Papio papio). The mucoprotein was susceptible to the action of both testicular and streptococcal hyaluronidase and, when partially purified, was found to contain considerable amts. of protein together with glucosamine and hexuronic acid (presumably glucuronic acid) in approx. equimolar amts. The partially purified material contained no detectable S. From these observations and behavior on paper electrophoresis it was concluded that the mucopolysaccharide in sexual-skin exudates was hyaluronic acid and that chondroitin sulfate was not present. Detns. were made of the hyaluronic acid and chondroitin sulfate concns. in sexual skin during the swelling and collapsing stages. There were considerable species differences in amts., but in all 3 species swelling was accompanied by considerably increased hyaluronic acid concentration and decreased chondroitin sulfate concentration (expressed on a wet-weight basis). It was apparent that the swelling of sexual skin was accompanied by a vast increase in the absolute amount of hyaluronic acid in the tissue, and calcns. on a dry-weight basis revealed that the total amount of chondroitin sulfate increased slightly during sexual-skin swelling. Calcn. and extraction expts. revealed that a considerable proportion of the hyaluronic acid of swollen sexual skin is not contained in the exudate. Significant relations exist in all species between the total hyaluronic acid content of sexual skins and their H2O content. Viscosity measurements did not reveal any evidence of any consistent changes in the degree of polymerization of the exudate hyaluronic acid during the sexual-skin cycle or reveal any relation of degree of polymerization to hyaluronate concentration of the exudate.

L29 ANSWER 15 OF 17 MEDLINE on STN
ACCESSION NUMBER: 1999213879 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10199787
TITLE: Increased sulfatation of orbital glycosaminoglycans in Graves' ophthalmopathy.
AUTHOR: Hansen C; Rouhi R; Forster G; Kahaly G J
CORPORATE SOURCE: Department of Endocrinology/Metabolism, Gutenberg-University Hospital, Mainz, Germany.
SOURCE: The Journal of clinical endocrinology and metabolism, (1999 Apr) Vol. 84, No. 4, pp. 1409-13.
Journal code: 0375362. ISSN: 0021-972X.

PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Abridged Index Medicus Journals; Priority Journals
ENTRY MONTH: 199904
ENTRY DATE: Entered STN: 4 May 1999
Last Updated on STN: 4 May 1999
Entered Medline: 21 Apr 1999

AB Accumulation of interstitial glycosaminoglycans (GAG) in orbital tissue of patients with Graves' ophthalmopathy (GO) leads to edema, increased orbital pressure, and proptosis. In this study, a new, highly sensitive, high performance liquid chromatography method was developed to determine the altered concentration and biochemical composition of different GAG polymers in orbital connective tissue of 27 GO patients and 18 controls. GAG were isolated by tissue homogenization and digestion, followed by sequential enzymatic GAG hydrolysis and high performance liquid chromatographic analysis of the resulting alpha,beta-unsaturated disaccharides. High recovery rates of 78 +/- 6% (mean +/- SE) and a detection limit of 4.0 microg/L (0.01 micromol/L) were obtained. Total tissue GAG amounted to 254 +/- 16 microg/g wet tissue wt in patients and 150 +/- 13 microg/g ($P < 0.0001$) in controls. Regarding the GAG polymers, marked differences were detected between patients and controls (chondroitin sulfate, 127 +/- 13 vs. 47 +/- 5 microg/g; hyaluronic acid, 56 +/- 5 vs. 34 +/- 4 microg/g; both $P < 0.0001$; dermatan sulfate, 77 +/- 6 vs. 69 +/- 6 microg/g; $P < 0.05$). In patients, chondroitin sulfate was the major GAG component (48 +/- 6 vs. 31 +/- 5% of total GAG in controls), whereas dermatan sulfate was dominant in controls (46 +/- 8% vs. 30 +/- 5%). The sulfated disaccharide digestion products were markedly increased ($P < 0.0001$) in patients, and the ratio of sulfated vs. total disaccharide content was 85 +/- 6% vs. 65 +/- 5% ($P < 0.05$) in patients and controls, respectively. As accumulation of negatively charged sulfate residues in GAG disaccharides results in enhanced water-binding capacity, beside inflammation and increased volume of the orbital adipose tissue, the altered structure and nature of sulfated GAG units in the orbit may be responsible for the pathogenic changes in Graves' ophthalmopathy.

L29 ANSWER 16 OF 17 MEDLINE on STN
ACCESSION NUMBER: 97113952 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8955783
TITLE: Hyaluronan localization in the rabbit larynx.
AUTHOR: Hallen L; Johansson C; Laurent C; Dahlqvist A
CORPORATE SOURCE: Department of Otorhinolaryngology, Central Hospital, Falun, Sweden.
SOURCE: The Anatomical record, (1996 Dec) Vol. 246, No. 4, pp. 441-5.
Journal code: 0370540. ISSN: 0003-276X.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199705
ENTRY DATE: Entered STN: 23 May 1997
Last Updated on STN: 23 May 1997
Entered Medline: 15 May 1997

AB BACKGROUND: The larynx is a complex organ composed of different connective tissue elements. So far, the extracellular matrix of the larynx has not been thoroughly described. Hyaluronan is a matrix polysaccharide with physicochemical effects and biological cell functions in soft connective tissues. METHODS: The histochemical distribution of hyaluronan (hyaluronic acid, hyaluronate) was studied in tissue sections from various levels of the rabbit larynx by means of a hyaluronan-binding protein and avidin biotin peroxidase staining.

Microwave-aided fixation was used to retain the extracellular location of hyaluronan. RESULTS: Hyaluronan accumulated chiefly in the subepithelial lamina propria and in the connective tissue enclosing striated muscle fibres of the thyroarytenoid muscle and vocalis muscle. This localization contrasted sharply with the weak staining for hyaluronan in muscles external to the thyroid cartilage. Intensive staining for hyaluronan was found in perivascular and periglandular connective tissue, as in the vacuoles of the hyaline cartilage of the thyroid, cricoid and arytenoid cartilages, and to a lesser extent in the lacunae of the chondrocytes and in the perichondrium of the elastic cartilage of the epiglottis. CONCLUSIONS: Hyaluronan was heterogenously distributed in the rabbit larynx. It was abundant in intrinsic laryngeal muscles performing small, precise, and rapid movements and in the subepithelium at the glottic level, where it may facilitate mucosal movements. The abundant hyaluronan in the subglottic region may be involved in the control of vascular leakage and edema formation.

L29 ANSWER 17 OF 17 MEDLINE on STN
ACCESSION NUMBER: 92225276 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1563592
TITLE: Hyaluronan.
AUTHOR: Laurent T C; Fraser J R
CORPORATE SOURCE: Department of Medical and Physiological Chemistry, University of Uppsala, Sweden.
SOURCE: The FASEB journal : official publication of the Federation of American Societies for Experimental Biology, (1992 Apr) Vol. 6, No. 7, pp. 2397-404. Ref: 74
Journal code: 8804484. ISSN: 0892-6638.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
General Review; (REVIEW)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199205
ENTRY DATE: Entered STN: 7 Jun 1992
Last Updated on STN: 7 Jun 1992
Entered Medline: 18 May 1992

AB Hyaluronan (hyaluronic acid) is a high-molecular-mass polysaccharide found in the extracellular matrix, especially of soft connective tissues. It is synthesized in the plasma membrane of fibroblasts and other cells by addition of sugars to the reducing end of the polymer, whereas the nonreducing end protrudes into the pericellular space. The polysaccharide is catabolized locally or carried by lymph to lymph nodes or the general circulation, from where it is cleared by the endothelial cells of the liver sinusoids. The overall turnover rate is surprisingly rapid for a connective tissue matrix component (t1/2 0.5 to a few days). Hyaluronan has been assigned various physiological functions in the intercellular matrix, e.g., in water and plasma protein homeostasis. Hyaluronan production increases in proliferating cells and the polymer may play a role in mitosis. Extensive hyaluronidase-sensitive coats have been identified around mesenchymal cells. They are either anchored firmly in the plasma membrane or bound via hyaluronan-specific binding proteins (receptors). Such receptors have now been identified on many different cells, e.g., the lymphocyte homing receptor CD 44. Interaction between a hyaluronan receptor and extracellular polysaccharide has been connected with locomotion and cell migration. Hyaluronan seems to play an important role during development and differentiation and has other cell regulatory activities. Hyaluronan has also been recognized in clinical medicine. A concentrated solution of hyaluronan (10 mg/ml) has, through its tissue protective and rheological properties, become a device in ophthalmic surgery. Analysis of serum hyaluronan is promising in the diagnosis of liver disease and various inflammatory conditions, e.g., rheumatoid arthritis. Interstitial

edema caused by accumulation of hyaluronan may cause dysfunction in various organs.

L29 ANSWER 1 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1999:248866 CAPLUS
DOCUMENT NUMBER: 131:72311
TITLE: Increased sulfatation of orbital glycosaminoglycans in Graves' ophthalmopathy
AUTHOR(S): Hansen, C.; Rouhi, R.; Forster, G.; Kahaly, G. J.
CORPORATE SOURCE: Department of Endocrinology / Metabolism, Gutenberg-University Hospital, Mainz, Germany
SOURCE: Journal of Clinical Endocrinology and Metabolism (1999), 84(4), 1409-1413
CODEN: JCEMAZ; ISSN: 0021-972X
PUBLISHER: Endocrine Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Accumulation of interstitial glycosaminoglycans (GAG) in orbital tissue of patients with Graves' ophthalmopathy (GO) leads to edema, increased orbital pressure, and proptosis. In this study, a new, highly sensitive HPLC method was developed to determine the altered concentration and biochem. composition of different GAG polymers in orbital connective tissue of 27 GO patients and 18 controls. GAG were isolated by tissue homogenization and digestion, followed by sequential enzymic GAG hydrolysis and HPLC anal. of the resulting α,β-unsatd. disaccharides. High recovery rates of 78% and a detection limit of 4.0 μg/L (0.01 μmol/L) were obtained. Total tissue GAG amounted to 254 μg/g wet tissue weight in patients and 150 μg/g in controls. Regarding the GAG polymers, marked differences were detected between patients and controls (chondroitin sulfate, 127 vs. 47 μg/g; hyaluronic acid, 56 vs. 34 μg/g; and dermatan sulfate, 77 vs. 69 μg/g). In patients, chondroitin sulfate was the major GAG component (48 vs. 31% of total GAG in controls), whereas dermatan sulfate was dominant in controls (46% vs. 30%). The sulfated disaccharide digestion products were markedly increased in patients, and the ratio of sulfated vs. total disaccharide content was 85% vs. 65% in patients and controls, resp. As accumulation of neg. charged sulfate residues in GAG disaccharides results in enhanced water-binding capacity, beside inflammation and increased volume of the orbital adipose tissue, the altered structure and nature of sulfated GAG units in the orbit may be responsible for the pathogenic changes in Graves' ophthalmopathy.
REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 2 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1997:10470 CAPLUS
DOCUMENT NUMBER: 126:57790
TITLE: Hyaluronan localization in the rabbit larynx
AUTHOR(S): Hallen, L.; Johansson, C.; Laurent, C.; Dahlqvist, A. A.
CORPORATE SOURCE: Dep. Otorhinolaryngol., Central Hosp., Falun, Swed.
SOURCE: Anatomical Record (1996), 246(4), 441-445
CODEN: ANREAK; ISSN: 0003-276X
PUBLISHER: Wiley-Liss
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The larynx is a complex organ composed of different connective tissue elements. So far, the extracellular matrix of the larynx has not been thoroughly described. Hyaluronan is a matrix of the larynx has not been thoroughly described. Hyaluronan is a matrix polysaccharide with physicochem. effects and biol. cell functions in soft connective tissues. The histochem. distribution of hyaluronan (hyaluronic acid, hyaluronate) was studied in tissue sections from various levels of the rabbit larynx by means of a hyaluronan-binding protein and avidin biotin peroxidase staining. Microwave-aided fixation was used to

retain the extracellular location of hyaluronan. Hyaluronan accumulated chiefly in the subepithelial lamina propria and in the connective tissue enclosing striated muscle fibers of the thyroarytenoid muscle and vocalis muscle. This localization contrasted sharply with the weak staining for hyaluronan in muscles external to the thyroid cartilage. Intensive staining for hyaluronan was found in perivascular and periglandular connective tissue, as in the vacuoles of the hyaline cartilage of the thyroid, cricoid and arytenoid cartilages, and to a lesser extent in the lacunae of the chondrocytes and in the perichondrium of the elastic cartilage of the epiglottis. Hyaluronan was heterogeneously distributed in the rabbit larynx. It was abundant in intrinsic laryngeal muscles performing small, precise, and rapid movements and in the subepithelium at the glottic level, where it may facilitate mucosal movements. The abundant hyaluronan in the subglottic region may be involved in the control of vascular leakage and edema formation.

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L29 ANSWER 3 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1992:241954 CAPLUS
DOCUMENT NUMBER: 116:241954
TITLE: Topical compositions for the treatment of circulatory diseases and for aesthetic medicine treatments
INVENTOR(S): Sternberg Ruiu, Rosa
PATENT ASSIGNEE(S): Italy
SOURCE: Eur. Pat. Appl., 6 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 477833	A1	19920401	EP 1991-116188	19910924
R: AT, BE, CH, DE, DK, ES, FR, GB, LI, NL				
PRIORITY APPLN. INFO.:			IT 1990-21606 A	19900928

AB A topical composition containing hydrogenated lecithins, hyaluronic acid, and elastin is used for the treatment of pathologies such as varicose veins, phlebitis, edemas, and obstructed veins. A composition was formulated containing hydrogenated lecithins 3500, hyaluronic acid 2, elastin 2, diachysis factor (mucopolysaccharide hydrolyzates) 294, mannitol 120 mg, and distilled water q.s. The composition was applied to legs daily for 4-5 days and the relief of symptoms such as edema and pain was observed

L29 ANSWER 4 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1981:172278 CAPLUS
DOCUMENT NUMBER: 94:172278
TITLE: Ultraviolet light induced connective tissue changes in rat skin
AUTHOR(S): Ohyama, Hideo; Nogami, Akira; Matsumura, Yuichi
CORPORATE SOURCE: Dep. Biochem., Wakayama Med. Coll., Wakayama, 640, Japan
SOURCE: Wakayama Medical Reports (1980), 23(2), 75-80
CODEN: WKMRAH; ISSN: 0511-084X
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Albino rats were exposed to UV light (UVL). The irradiation caused erythema and desquamation. The epidermis showed hyperkeratosis, parakeratosis and edema and the dermis showed edema. An increased staining for acid mucopolysaccharide was also observed The urinary excretion of hydroxyproline was not affected, while urinary hexosamine and uronic acid excretions were decreased with exposure to UVL. There were no

changes between control and UVL-exposed skins in the total hydroxyproline content. However, a small increase of solubility of skin collagen and a decrease of aldehyde content in soluble collagen were observed with UVL exposure. Although total glycosaminoglycan in skin increased 30% or more from control, there was no difference in the ratio of dermatan sulfate to hyaluronic acid with exposure to UVL. These results showed that the effect of UVL on rat skin in vivo was merely an inflammation phenomenon because an increase of glycosaminoglycan concentration and then an increased ratio of hexosamine to hydroxyproline and the aging process of skin was not caused.

L29 ANSWER 5 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1975:136936 CAPLUS
DOCUMENT NUMBER: 82:136936
TITLE: Pathogenesis of the endocrine exophthalmos
AUTHOR(S): Winand, R.
CORPORATE SOURCE: Acad. R. Med. Belg., Brussels, Belg.
SOURCE: Bulletin de l'Academie Royale de Medecine de Belgique (1973), 128(9), 717-32
CODEN: BARMAW; ISSN: 0001-4168
DOCUMENT TYPE: Journal; General Review
LANGUAGE: French
AB A review with 31 refs., with an explanation for the appearance of exophthalmos in human disease. One factor is an exophthalmogenic derivative of thyrotropin which has lost thyrotropic activity. The other is an abnormal γ-globulin which targets the pituitary factor on specific receptors of retroocular tissue. After binding to the plasma membranes, the pituitary factor induces the synthesis of cyclic AMP. This mediator increases the formation of 3'-phosphoadenosine 5'-phosphosulfate and finally stimulates the biosynthesis of mucopolysaccharides. The mucopolysaccharides, and particularly hyaluronic acid, are extremely hygroscopic and produce a profound edema. This edema occurring in a closed cavity will necessarily induce exophthalmia.

L29 ANSWER 6 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1972:42498 CAPLUS
DOCUMENT NUMBER: 76:42498
ORIGINAL REFERENCE NO.: 76:6855a,6858a
TITLE: Pathomorphological and some histochemical changes in the guinea pigs caused by Clostridium perfringens type A hyaluronidase
AUTHOR(S): Anosov, I. Ya.; Klimacheva, L. V.
CORPORATE SOURCE: Inst. Epidemiol. Mikrobiol. im. Gamalei, Moscow, USSR
SOURCE: Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii (1971), 48(9), 133-6
CODEN: ZMEIAV; ISSN: 0372-9311
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB Hyaluronidase isolated from C. perfringens, type A toxin in vitro depolymerized hyaluronic acid from human umbilical cord connective tissue and guïnea pig Achilles tendon connective tissue. Hyaluronidase injected i.m. into guinea pigs caused a serous-exudative inflammation, edema, intermuscular and endoneural diapedeses, and loss of acid mucopolysaccharides from the dense connective tissue, endomisium, perimisium, and muscular walls of the blood vessels. Conversion of connective tissue elements into scar tissue was delayed during proliferation processes.

L29 ANSWER 7 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1970:474792 CAPLUS
DOCUMENT NUMBER: 73:74792
ORIGINAL REFERENCE NO.: 73:12221a,12224a
TITLE: Analysis of myocardial mucopolysaccharides in hyper-

and hypothyroid rats and guinea pigs
AUTHOR(S): Von Knorring, Johan
CORPORATE SOURCE: Fourth Dep. Med., Univ. Helsinki, Helsinki, Finland
SOURCE: Annales Medicinae Experimentalis et Biologiae Fenniae (1970), 48(1), 8-15
CODEN: AMEBA7; ISSN: 0003-4479
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The amount of mucopolysaccharides (MPS), measured as the concentration of hexosamine and uronic acid in dry myocardial tissue, was normal in hyper- and hypothyroid rats and guinea pigs. TSH had no effect on these myocardial components in normal or hypothyroid rats. MPS solns. from papain-digested fresh myocardial tissue and pooled aortic tissue from hypothyroid and L-triiodothyronine (L-T3)-treated rats were separated by electrophoresis on cellulose acetate. There was a constant pattern of 3 Alcian blue-pos. fractions in the MPS extract from every heart and in the pooled aortic samples from each group. The most rapidly migrating band was considered to be chondroitin sulfate A/C (CS-A/C), and the most slowly migrating band hyaluronic acid (HA). The intermediate band was thought to be heparitin sulfate. On photoscanning, the MPS patterns of the hypothyroid rats showed a marked accentuation of the HA peak and a lowering of the CS-A/C peak. These changes were no longer seen in hypothyroid rats treated with L-T3. Instead, the proportion of CS-A/C in the total myocardial MPS was even higher than in the controls. This suggests that L-T3 stimulates the synthesis of chondroitin sulfates. The results support the theory that the effect of hypothyroidism on MPS metabolism is the result of thyroxine deficiency. The accumulation of HA in the myocardium in exptl. hypothyroidism may explain the interstitial edema and pericardial effusion seen in severe cases of human myxedema.

L29 ANSWER 8 OF 17 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1970:64664 CAPLUS
DOCUMENT NUMBER: 72:64664
ORIGINAL REFERENCE NO.: 72:11797a,11800a
TITLE: Myocardial connective tissue metabolism in response to injury. II. Mucopolysaccharides involved in isoproterenol-induced necrosis and repair in rat hearts
AUTHOR(S): Judd, Joseph T.; Wexler, Bernard C.; Williamson, George; Boyer, Jacob
CORPORATE SOURCE: May Inst. for Med. Res., Jewish Hosp., Cincinnati, OH, USA
SOURCE: Circulation Research (1970), 26(1), 101-9
CODEN: CIRUAL; ISSN: 0009-7330
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Myocardial necrosis caused by isoproterenol (50 mg/100 g, s.c.) was studied in rats. Total hexosamine, galactosamine, neutral sugar, and uronic acid levels were determined on various fractions isolated from the hearts, mucopolysaccharides being precipitated as the cetylpyridinium chloride complex and fractionated according to their solubility in NaCl solns. Of the hexosamine in the heart, .apprx.50% was retained after proteolytic digestion and dialysis. Approx. 25-33% of the nondialyzable hexosamine was found in mucopolysaccharides. The hyaluronic acid fraction of the mucopolysaccharides increased during the early edematous reaction observed in the heart. The chondroitin sulfate fraction increased in conjunction with the beginning fibrinogenic processes and remained elevated during repair. Glycoproteins may be involved in myocardial necrosis and repair.

L31 ANSWER 1 OF 10 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1981:600058 CAPLUS
DOCUMENT NUMBER: 95:200058
TITLE: Circumscribed myxedema of lichen myxedematosus as a sign of faulty formation of the proteoglycan macromolecule
AUTHOR(S): Maeda, Hidefumi; Ishikawa, Hidekazu; Ohta, Shigeo
CORPORATE SOURCE: Sch. Med., Gunma Univ., Maebashi, Japan
SOURCE: British Journal of Dermatology (1981), 105(3), 239-45
CODEN: BJDEAZ; ISSN: 0007-0963
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An ultrastructural method for the study of dermal glycosaminoglycan in an involved area of lichen myxedematosus is described. Although histochem. and biochem. studies have indicated simply an accumulated deposition of hyaluronic acid in the lesion, the glycosaminoglycan ultrastructure within it was distinctly different from that in normal skin. The glycosaminoglycan structure of normal skin was similar to the proteoglycan aggregate model described by L. Rosenberg (1975). As confirmed by the enzymic digestion procedure, it represents the ultrastructure of hyaluronic acid bound to glycosaminoglycans such as dermatan sulfate or chondroitin sulfate. In contrast, hyaluronic acid filaments observed in lesions of lichen myxedematosus contained no glycosaminoglycan subunits.

L31 ANSWER 2 OF 10 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1976:540882 CAPLUS
DOCUMENT NUMBER: 85:140882
TITLE: Acid mucopolysaccharides of scleromyxedema skin
AUTHOR(S): Takama, Hiromichi; Ohashi, Masaru; Iwata, Hisashi
CORPORATE SOURCE: Sch. Med., Univ. Nagoya, Nagoya, Japan
SOURCE: Nippon Hifuka Gakkai Zasshi (1976), 86(7), 417-25
CODEN: NHKZAD; ISSN: 0021-499X
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB Skin lesions in scleromyxedema were increased in acid mucopolysaccharides, particularly hyaluronic acid, which accounted for 97.6% of the total. The carbohydrate composition of hyaluronic acid from the patient's skin was identical with that of normal skin.

L31 ANSWER 3 OF 10 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1968:84858 CAPLUS
DOCUMENT NUMBER: 68:84858
ORIGINAL REFERENCE NO.: 68:16323a,16326a
TITLE: Identification of acid mucopolysaccharides by micro electrophoresis
AUTHOR(S): Herd, J. Kenneth
CORPORATE SOURCE: Child. Hosp., Buffalo, NY, USA
SOURCE: Analytical Biochemistry (1968), 23(1), 117-21
CODEN: ANBCA2; ISSN: 0003-2697
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A method is described for identifying mucopolysaccharides by electrophoresis on cellulose acetate membranes at pH 6.9 in phosphate buffer and pH 3 in C5H5N-HCO2H buffer. The order of reference compds. at 12 min. for pH 3 electrophoresis was hyaluronic acid (I) > keratosulfate (II) > chondroitin sulfate B (III) > heparin monosulfate (IV) > chondroitin sulfate A (V) > heparin. The application of 0.5 γ sample gave a narrow band with sharp boundaries and no overlapping. II, IV, and VI gave the broadest bands. Only single bands formed with the above compds.; II spread widely on runs >15 min. V and chondroitin sulfate C (VII) gave only a single band. I and VI were clearly differentiated at pH 3. At pH 6.9, separation between II, III, and IV

was improved; III migrated the fastest. I and VII were identified in the urine of children with hypothyroid myxedema. 23 references.

L31 ANSWER 4 OF 10 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1964:85247 CAPLUS
DOCUMENT NUMBER: 60:85247
ORIGINAL REFERENCE NO.: 60:14962e-f
TITLE: Histochemistry of the cutaneous interfibrillar ground substance
AUTHOR(S): Johnson, Waine C.; Helwig, Elson B.
CORPORATE SOURCE: Armed Forces Inst. of Pathol., Washington, DC
SOURCE: Journal of Investigative Dermatology (1964), 42, 81-6
CODEN: JIDEAE; ISSN: 0022-202X
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB The extracellular interfibrillar ground substance of normal human dermis and of patients with localized myxedema contains an acid mucopolysaccharide which is mainly hyaluronic acid. Specialized structures (dermal hair papillae, mast cell granules, and wails of larger blood vessels) contain some sulfated acid mucopolysaccharide. Collagen fibers and dermal hair papillae and blood vessels may yield the products of chondroitin sulfate B found in the skin.

L31 ANSWER 5 OF 10 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1947:32957 CAPLUS
DOCUMENT NUMBER: 41:32957
ORIGINAL REFERENCE NO.: 41:6621f-g
TITLE: The mucopolysaccharide content of the skin in localized (pretibial) myxedema
AUTHOR(S): Watson, E. M.; Pearce, R. H.
CORPORATE SOURCE: Univ. of Western Ontario, London, Can.
SOURCE: American Journal of Clinical Pathology (1947), 17, 507-12
CODEN: AJCPAI; ISSN: 0002-9173
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB The affected skin of 2 patients with pretibial myxedema contained a marked excess of acid mucopolysaccharides, including a substance exhibiting the characteristics of hyaluronic acid. 17 references.

L31 ANSWER 6 OF 10 MEDLINE on STN
ACCESSION NUMBER: 2006213832 MEDLINE
DOCUMENT NUMBER: PubMed ID: 16618989
TITLE: [The metabolism of glycosaminoglycans in the course of Graves' disease].
Metabolizm glikozoaminoglikanow w przebiegu choroby Gravesa-Basedowa.
AUTHOR: Winsz-Szczotka Katarzyna; Komosinska-Vassev Katarzyna; Olczyk Krystyna
CORPORATE SOURCE: Zaklad Chemii Klinicznej i Diagnostyki Laboratoryjnej Slaskiej Akademii Medycznej, Sosnowiec..
winsz@slam.katowice.pl
SOURCE: Post py higieny i medycyny doswiadczalnej (Online), (2006) Vol. 60, pp. 184-91. Ref: 69
Journal code: 101206517. E-ISSN: 1732-2693.
PUB. COUNTRY: Poland
DOCUMENT TYPE: (ENGLISH ABSTRACT)
Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
LANGUAGE: Polish
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200606

ENTRY DATE: Entered STN: 20 Apr 2006
Last Updated on STN: 28 Jun 2006
Entered Medline: 27 Jun 2006

AB Glycosaminoglycans (GAGs), which include chondroitin sulfate (CS), dermatan sulfates (DS), heparan sulfate (HS), heparin (H), keratan sulfate (KS), and hyaluronic acid (HA), are a group of linear, polyanionic heteropolysaccharides. The GAGs chains, except for those of hyaluronic acid, are covalently attached to core proteins, forming proteoglycans (PGs). PGs/GAGs are present at the cellular level as elements of the cell membrane and intracellular granules. They are also components of the ground substance of the extracellular matrix. These macromolecules are involved in cell adhesion, migration, and proliferation. Alterations in GAGs metabolism may influence the pathogenesis of many disorders, including Graves' disease. Graves' disease is an autoimmune thyroid pathology characterized by hyperthyroidism, thyroid hyperplasia, as well as ophthalmopathy and/or pretibial myxedema. The pathogenesis of these extrathyroidal manifestations involves fibroblast activation and increased glycosaminoglycan synthesis and accumulation. Disturbances in GAGs metabolism in tissue are associated with qualitative and quantitative GAGs alterations in Graves' patients' serum and urine. Although the mechanisms leading to the development of orbital and/or skin complications in the course of Graves' disease have not been fully elucidated, it is postulated that they depend on both immunological disturbances and the hyperthyroid state. SUMMARY: The alterations in GAGs metabolism connected with Graves' disease could lead to systemic changes in the proprieties of the extracellular matrix.

L31 ANSWER 7 OF 10 MEDLINE on STN
ACCESSION NUMBER: 92162547 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1536759
TITLE: Disaccharide analysis of the skin glycosaminoglycans in systemic sclerosis.
AUTHOR: Akimoto S; Hayashi H; Ishikawa H
CORPORATE SOURCE: Department of Dermatology, School of Medicine, Gunma University, Maebashi, Japan.
SOURCE: The British journal of dermatology, (1992 Jan) Vol. 126, No. 1, pp. 29-34.
Journal code: 0004041. ISSN: 0007-0963.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199204
ENTRY DATE: Entered STN: 17 Apr 1992
Last Updated on STN: 17 Apr 1992
Entered Medline: 1 Apr 1992

AB The disaccharides constituting chondroitinase-digestible glycosaminoglycan (GAG) in the skin lesions of patients with systemic sclerosis were determined using high-performance liquid chromatography (HPLC). In scleroderma there was an increase in the amount of delta Di-4S(DS), the main disaccharide unit of dermatan sulphate, and a decrease in delta Di-HA, the disaccharide unit of hyaluronic acid, as compared with normal skin from a similar site. The distribution pattern of the main disaccharides constituting chondroitin sulphate and dermatan sulphate in scleroderma differed from that in scars or scleredema.

L31 ANSWER 8 OF 10 MEDLINE on STN
ACCESSION NUMBER: 87155855 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2950837
TITLE: Marrow myxedema. Gelatinous transformation of marrow ground substance in a patient with severe hypothyroidism.
AUTHOR: Savage R A; Sipple C

SOURCE: Archives of pathology & laboratory medicine, (1987 Apr) Vol. 111, No. 4, pp. 375-7.
Journal code: 7607091. ISSN: 0003-9985.
PUB. COUNTRY: United States
DOCUMENT TYPE: (CASE REPORTS)
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Abridged Index Medicus Journals; Priority Journals
ENTRY MONTH: 198704
ENTRY DATE: Entered STN: 3 Mar 1990
Last Updated on STN: 3 Mar 1990
Entered Medline: 16 Apr 1987

AB Replacement of marrow ground substance by hyaluronic acid-rich mucopolysaccharides (gelatinous transformation) has been previously reported to occur in severely malnourished patients. A patient with severe anemia and hypothyroidism without malnutrition was found to have gelatinous transformation of the marrow. This process is similar histologically to dermal myxedema , and the findings in this patient suggest questions for further study involving possible roles for thyroid-stimulating hormone in the development of marrow and visceral myxedema and the alterations in the normal partitioning process between serum and red blood cell low-density lipoproteins that produce acanthocytes in blood smears from patients with hypothyroidism.

L31 ANSWER 9 OF 10 MEDLINE on STN
ACCESSION NUMBER: 82264832 MEDLINE
DOCUMENT NUMBER: PubMed ID: 7107280
TITLE: [Lichen myxedematosus and scleromyxedema].
Lichen myxoedematosus und Skleromyxodem.
AUTHOR: Hodl S
SOURCE: Der Hautarzt; Zeitschrift fur Dermatologie, Venerologie, und verwandte Gebiete, (1982 Jul) Vol. 33, No. 7, pp. 359-65.
Journal code: 0372755. ISSN: 0017-8470.
PUB. COUNTRY: GERMANY, WEST: Germany, Federal Republic of
DOCUMENT TYPE: (CASE REPORTS)
(ENGLISH ABSTRACT)
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: German
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198210
ENTRY DATE: Entered STN: 17 Mar 1990
Last Updated on STN: 17 Mar 1990
Entered Medline: 29 Oct 1982

AB Review of the clinical picture, dynamics of the disease, associated symptoms and signs, etiopathology as well as treatment and prognosis of lichen myxedematosus and scleromyxedema. Diagnostic criteria are wax-like papules and leather-like skin thickening, an increase in concentration of acid mucopolysaccharides consisting mainly of hyaluronic acid in the dermis, lympho-plasmacytoid infiltrates in the skin and the bone marrow, normal thyroid function, and paraproteinemia of light chain type lambda or kappa. The nosologic connection of both manifestations implying a single disease entity is emphasized by two of our clinical observations of the transition of lichen myxedematosus to scleromyxedema. An attempt will be made to interpret this as a certain kind of myelomesenchymal syndrome.

L31 ANSWER 10 OF 10 MEDLINE on STN
ACCESSION NUMBER: 65073712 MEDLINE
DOCUMENT NUMBER: PubMed ID: 14269157
TITLE: MUCOPOLYSACCHARIDES IN DISEASE.
AUTHOR: BRIMACOMBE J S; STACEY M

SOURCE: Advances in clinical chemistry, (1964) Vol. 7, pp. 199-234.
Ref: 0
Journal code: 2985173R. ISSN: 0065-2423.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
LANGUAGE: English
FILE SEGMENT: OLDMEDLINE; NONMEDLINE
ENTRY MONTH: 199612
ENTRY DATE: Entered STN: 16 Jul 1999
Last Updated on STN: 16 Jul 1999
Entered Medline: 1 Dec 1996

L36 ANSWER 1 OF 1 MEDLINE on STN
ACCESSION NUMBER: 2000014009 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10576924
TITLE: Cartilage degradation by hyaluronate lyase and chondroitin ABC lyase: a MALDI-TOF mass spectrometric study.
AUTHOR: Schiller J; Arnhold J; Benard S; Reichl S; Arnold K
CORPORATE SOURCE: Institute of Medical Physics and Biophysics, University of Leipzig, Germany.. schij@server3.medizin.uni-leipzig.de
SOURCE: Carbohydrate research, (1999 May 31) Vol. 318, No. 1-4, pp. 116-22.
Journal code: 0043535. ISSN: 0008-6215.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199911
ENTRY DATE: Entered STN: 11 Jan 2000
Last Updated on STN: 11 Jan 2000
Entered Medline: 2 Nov 1999

AB Matrix-assisted laser desorption ionization and time-of-flight mass spectrometry (MALDI-TOF MS) has been used to investigate degradation products of two selected polysaccharides of cartilage (chondroitin sulfate and hyaluronic acid). Testicular hyaluronate lyase and chondroitin ABC lyase were used for enzymic digestion of both polysaccharides as well as of cartilage specimens. Polysaccharide solutions and cartilage supernatants were assayed by positive and negative MALDI-TOF MS. Especially chondroitin ABC lyase produced high amounts of digestion products (unsaturated di- and tetrasaccharides) from polysaccharides as well as from cartilage, clearly monitored by MALDI-TOF MS. It is concluded that MALDI-TOF MS provides a precise and fast tool for the determination of oligosaccharides since no previous derivatization is required.

L37 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:817718 CAPLUS
DOCUMENT NUMBER: 141:307584
TITLE: Remedy for nerve damage containing glucuronic acid and/or N-acetylglucosamine-containing low-molecular weight saccharides
INVENTOR(S): Kato, Tadahiko; Asari, Akira
PATENT ASSIGNEE(S): Seikagaku Corporation, Japan
SOURCE: PCT Int. Appl., 36 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004084912	A1	20041007	WO 2004-JP4240	20040325
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2004224510	A1	20041007	AU 2004-224510	20040325
CA 2519797	A1	20041007	CA 2004-2519797	20040325
EP 1611893	A1	20060104	EP 2004-723399	20040325
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
CN 1794999	A	20060628	CN 2004-80014299	20040325
US 2006135439	A1	20060622	US 2005-550998	20051024

PRIORITY APPLN. INFO.: JP 2003-83831 A 20030325
WO 2004-JP4240 W 20040325

AB It is intended to provide a remedy for nerve damage caused by spinal injury, nerve trauma or the like which contains, as the active ingredient, a low-mol. weight saccharide at least having glucuronic acid and/or N-acetylglucosamine as the constituting sugar(s) or a pharmaceutically acceptable salt thereof. Preferably, a remedy for nerve damage which contains, as the active ingredient, a low-mol. weight hyaluronic acid (still preferably hyaluronic acid disaccharide to hyaluronic acid 2500-saccharide, still preferably hyaluronic acid disaccharide to hyaluronic acid 50-saccharide, particularly preferably hyaluronic acid tetrasaccharide) or a pharmaceutically acceptable salt thereof. The effect of hyaluronic acid tetrasaccharide (HA4) in spiral injury model rats was examined

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L39 ANSWER 1 OF 1 MEDLINE on STN

ACCESSION NUMBER:	93193107 MEDLINE
DOCUMENT NUMBER:	PubMed ID: 1338190
TITLE:	NMR studies of a tetrasaccharide from hyaluronic acid.
AUTHOR:	Livant P; Roden L; Krishna N R
CORPORATE SOURCE:	Department of Biochemistry, University of Alabama, Birmingham 35294.
SOURCE:	Carbohydrate research, (1992 Dec 31) Vol. 237, pp. 271-81. Journal code: 0043535. ISSN: 0008-6215.
PUB. COUNTRY:	Netherlands
DOCUMENT TYPE:	Journal; Article; (JOURNAL ARTICLE)
LANGUAGE:	English
FILE SEGMENT:	Priority Journals
ENTRY MONTH:	199304
ENTRY DATE:	Entered STN: 23 Apr 1993 Last Updated on STN: 6 Feb 1998 Entered Medline: 15 Apr 1993

L41 ANSWER 28 OF 38 MEDLINE on STN
ACCESSION NUMBER: 2007052896 MEDLINE
DOCUMENT NUMBER: PubMed ID: 17173853
TITLE: Quantitative continuous assay for hyaluronan synthase.
AUTHOR: Krupa Joanne C; Shaya David; Chi Lianli; Linhardt Robert J; Cygler Miroslaw; Withers Stephen G; Mort John S
CORPORATE SOURCE: Joint Diseases Laboratory, Shriners Hospital for Children, Montreal, Que., Canada H3G 1A6.
CONTRACT NUMBER: GM38060 (NIGMS)
HL62244 (NHLBI)
SOURCE: Analytical biochemistry, (2007 Feb 15) Vol. 361, No. 2, pp. 218-25. Electronic Publication: 2006-11-27.
Journal code: 0370535. ISSN: 0003-2697.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, N.I.H., EXTRAMURAL)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200704
ENTRY DATE: Entered STN: 30 Jan 2007
Last Updated on STN: 18 Apr 2007
Entered Medline: 17 Apr 2007

AB A rapid, continuous, and convenient three-enzyme coupled UV absorption assay was developed to quantitate the glucuronic acid and N-acetylglucosamine transferase activities of hyaluronan synthase from Pasteurella multocida (PmHAS). Activity was measured by coupling the UDP produced from the PmHAS-catalyzed transfer of UDP-GlcNAc and UDP-GlcUA to a hyaluronic acid tetrasaccharide primer with the oxidation of NADH. Using a fluorescently labeled primer, the products were characterized by gel electrophoresis. Our results show that a truncated soluble form of recombinant PmHAS (residues 1-703) can catalyze the glycosyl transfers in a time- and concentration-dependent manner. The assay can be used to determine kinetic parameters, inhibition constants, and mechanistic aspects of this enzyme. In addition, it can be used to quantify PmHAS during purification of the enzyme from culture media.

L41 ANSWER 29 OF 38 MEDLINE on STN
ACCESSION NUMBER: 2002311094 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12054587
TITLE: Carriers for enzymatic attachment of glycosaminoglycan chains to peptide.
AUTHOR: Takagaki Keiichi; Ishido Keinosuke; Kakizaki Ikuko; Iwafune Mito; Endo Masahiko
CORPORATE SOURCE: Department of Biochemistry, Hirosaki University School of Medicine, 5 Zaifu-cho, Hirosaki 036-8562, Japan.
SOURCE: Biochemical and biophysical research communications, (2002 Apr 26) Vol. 293, No. 1, pp. 220-4.
Journal code: 0372516. ISSN: 0006-291X.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200207
ENTRY DATE: Entered STN: 11 Jun 2002
Last Updated on STN: 7 Jul 2002
Entered Medline: 5 Jul 2002

AB In the previous study, we have found that the endo-beta-xylosidase from Patinopecten had the attachment activities of glycosaminoglycan (GAG) chains to peptide. As artificial carrier substrates for this reaction, synthesis of various GAG chains having the linkage region tetrasaccharide,

GlcA beta 1-3Gal beta 1-3Gal beta 1-4Xyl, between GAG chain and core protein of proteoglycan was investigated. Hyaluronic acid (HA), chondroitin (Ch), chondroitin 4-sulfate (Ch4S), chondroitin 6-sulfate (Ch6S), and desulfated dermatan sulfate (desulfated DS) as donors and the 4-metylumbelliferone (MU)-labeled hexasaccharide having the linkage region tetrasaccharide at its reducing terminals (MU-hexasaccharide) as an acceptor were subjected to a transglycosylation reaction of testicular hyaluronidase. The products were analyzed by high-performance liquid chromatography and enzyme digestion, and the results indicated that HA, Ch, Ch4S, Ch6S, and desulfated DS chains elongated by the addition of disaccharide units to the nonreducing terminal of MU-hexasaccharide. It was possible to custom-synthesize various GAG chains having the linkage region tetrasaccharide as carrier substrates for enzymatic attachment of GAG chains to peptide.

L41 ANSWER 30 OF 38 MEDLINE on STN
ACCESSION NUMBER: 2001301729 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11327856
TITLE: Active site of chondroitin AC lyase revealed by the structure of enzyme-oligosaccharide complexes and mutagenesis.
AUTHOR: Huang W; Boju L; Tkalec L; Su H; Yang H O; Gunay N S; Linhardt R J; Kim Y S; Matte A; Cygler M
CORPORATE SOURCE: Biotechnology Research Institute, 6100 Royalmount Avenue, Montreal, Quebec H4P 2R2 Canada.
CONTRACT NUMBER: GM38060 (NIGMS)
HL52622 (NHLBI)
SOURCE: Biochemistry, (2001 Feb 27) Vol. 40, No. 8, pp. 2359-72.
Journal code: 0370623. ISSN: 0006-2960.
PUB. COUNTRY: United States
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: PDB-1HM2; PDB-1HM3; PDB-1HMU; PDB-1HMW
ENTRY MONTH: 200105
ENTRY DATE: Entered STN: 4 Jun 2001
Last Updated on STN: 4 Jun 2001
Entered Medline: 31 May 2001

AB The crystal structures of Flavobacterium heparinium chondroitin AC lyase (chondroitinase AC; EC 4.2.2.5) bound to dermatan sulfate hexasaccharide (DS(hexa)), tetrasaccharide (DS(tetra)), and hyaluronic acid tetrasaccharide (HA(tetra)) have been refined at 2.0, 2.0, and 2.1 A resolution, respectively. The structure of the Tyr234Phe mutant of AC lyase bound to a chondroitin sulfate tetrasaccharide (CS(tetra)) has also been determined to 2.3 A resolution. For each of these complexes, four (DS(hexa) and CS(tetra)) or two (DS(tetra) and HA(tetra)) ordered sugars are visible in electron density maps. The lyase AC DS(hexa) and CS(tetra) complexes reveal binding at four subsites, -2, -1, +1, and +2, within a narrow and shallow protein channel. We suggest that subsites -2 and -1 together represent the substrate recognition area, +1 is the catalytic subsite and +1 and +2 together represent the product release area. The putative catalytic site is located between the substrate recognition area and the product release area, carrying out catalysis at the +1 subsite. Four residues near the catalytic site, His225, Tyr234, Arg288, and Glu371 together form a catalytic tetrad. The mutations His225Ala, Tyr234Phe, Arg288Ala, and Arg292Ala, revealed residual activity for only the Arg292Ala mutant. Structural data indicate that Arg292 is primarily involved in recognition of the N-acetyl and sulfate moieties of galactosamine, but does not participate directly in catalysis. Candidates for the general base,

removing the proton attached to C-5 of the glucuronic acid at the +1 subsite, are Tyr234, which could be transiently deprotonated during catalysis, or His225. Tyrosine 234 is a candidate to protonate the leaving group. Arginine 288 likely contributes to charge neutralization and stabilization of the enolate anion intermediate during catalysis.

L41 ANSWER 31 OF 38 MEDLINE on STN
ACCESSION NUMBER: 97201069 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9048898
TITLE: Exploration of the action pattern of Streptomyces hyaluronate lyase using high-resolution capillary electrophoresis.
AUTHOR: Park Y; Cho S; Linhardt R J
CORPORATE SOURCE: Division of Medicinal and Natural Products Chemistry, College of Pharmacy, University of Iowa, Iowa City 52242, USA.
CONTRACT NUMBER: GM38060 (NIGMS)
HL52622 (NHLBI)
SOURCE: Biochimica et biophysica acta, (1997 Feb 8) Vol. 1337, No. 2, pp. 217-26.
Journal code: 0217513. ISSN: 0006-3002.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199704
ENTRY DATE: Entered STN: 14 Apr 1997
Last Updated on STN: 14 Apr 1997
Entered Medline: 1 Apr 1997

AB Hyaluronic acid was treated exhaustively with a hyaluronate lyase (hyaluronidase, EC 4.2.2.1) from Streptomyces hyalurolyticus to obtain a tetrasaccharide and a hexasaccharide product in a molar ratio of 1 to 1.2. The tetrasaccharide product was fluorescently labeled at the reducing end by reductive amination with 7-amino 1,3-naphthalene disulfonic acid (AGA) and the structure of the conjugate was determined spectroscopically. Partial treatments of hyaluronic acid with hyaluronate lyase afforded complex mixtures of oligosaccharides that were similarly fluorescently labeled. These labeled oligosaccharide mixtures were analyzed using high-resolution capillary electrophoresis. The resulting electropherograms showed the content of each hyaluronic acid derived oligosaccharide, having a degree of polymerization (dp) from 4 to 50, throughout the enzymatic reaction. Computer simulation studies gave comparable kinetic profiles suggesting that hyaluronate lyase exhibits a random endolytic action pattern. Interestingly, oligosaccharides of certain size (dp) were under-represented in these oligosaccharide mixtures suggesting that linkages at spacings of 10 to 12 saccharide units are somewhat resistant to this enzyme. The cause of this resistance might be the result of secondary or higher order structural features present in the hyaluronic acid polymer.

L41 ANSWER 32 OF 38 MEDLINE on STN
ACCESSION NUMBER: 94347820 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8068717
TITLE: Kinetic and mechanistic studies with bovine testicular hyaluronidase.
AUTHOR: Cramer J A; Bailey L C; Bailey C A; Miller R T
CORPORATE SOURCE: Department of Pharmaceutical Chemistry, College of Pharmacy, Rutgers, State University, Piscataway, NJ 08855-0789.
SOURCE: Biochimica et biophysica acta, (1994 Aug 18) Vol. 1200, No. 3, pp. 315-21.
Journal code: 0217513. ISSN: 0006-3002.

PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199409
ENTRY DATE: Entered STN: 6 Oct 1994
Last Updated on STN: 6 Feb 1998
Entered Medline: 29 Sep 1994

AB Bovine testicular hyaluronidase exhibits hydrolase and transglycosylase activity. To assess the magnitude of each type of reaction, the time-course of hyaluronidase catalysed hyaluronic acid degradation was followed using a sensitive and specific HPLC method. The kinetic parameters Km and Vmax were calculated for purified short chain hyaluronic acid oligomers and native hyaluronic acid based on the appearance of unreactive hyaluronic acid tetrasaccharide. For hyaluronic acid oligomers, as substrate size increased Km decreased from 2.06 to 1.09 mM while Vmax remained about the same, indicating a 5-fold increase in the enzyme-substrate association constant, k1 (kcat/Km). The values of k2 (kcat), the enzyme-substrate disassociation constant, for native hyaluronic acid and hyaluronic acid decasaccharide were similar. The value of k1 for native hyaluronic acid, however, was larger by 70-fold. Kinetic degradation mechanisms for each hyaluronic acid oligomer, using chemical-reaction kinetics, were proposed and evaluated by computer curve fitting analysis of the experimental time vs. concentration data. The derived rate constants, together with mass balance calculations, revealed that transglycosylation plays a significant role in the degradation of all hyaluronic acid oligomers studied.

L41 ANSWER 33 OF 38 MEDLINE on STN
ACCESSION NUMBER: 90268585 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2112047
TITLE: Quantitation of hyaluronic acid and chondroitin sulphates in rabbit synovial fluid by high-performance liquid chromatography of oligosaccharides enzymatically derived thereof.
AUTHOR: Motohashi N; Mori I
CORPORATE SOURCE: Department of Pharmaceutical Radiochemistry, Kobe Women's College of Pharmacy, Japan.
SOURCE: Chemical & pharmaceutical bulletin, (1990 Mar) Vol. 38, No. 3, pp. 769-73.
Journal code: 0377775. ISSN: 0009-2363.
PUB. COUNTRY: Japan
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199007
ENTRY DATE: Entered STN: 10 Aug 1990
Last Updated on STN: 10 Aug 1990
Entered Medline: 9 Jul 1990

AB A high-performance liquid chromatographic (HPLC) method for quantifying unsaturated hexasaccharide and tetrasaccharide from Streptomyces hyaluronidase enzyme digestion products of hyaluronic acid was developed using a gel-permeation column packed with a sulphated polystyrene-divinylbenzene gel. For the oligosaccharides, the separation was accomplished in less than 7 min with a detection limit of 65 ng. An unsaturated non-sulphated disaccharide prepared from hyaluronic acid (delta Di-HA) and an unsaturated sulphated disaccharide (delta Di-4S) were analyzed by a HPLC method using a combination of two different gel-permeation columns. The separation of the disaccharides required less than 17 min at a flow rate of 0.7 ml/min with detection limits of as little as 4 ng for delta Di-HA and 5 ng for delta Di-4S. Both chromatographic methods were used for assay of a major component of hyaluronic acid and trace amounts of chondroitin sulphates in rabbit

synovial fluid. The resulting contents of hyaluronic acid were compared to the values of polymeric hyaluronic acid directly measured by a HPLC method using two gel-permeation columns packed with a poly(hydroxyalkyl methacrylate) gel and the amounts of hyaluronic acid converted from uronic acid content determined by a colorimetric method.

L41 ANSWER 34 OF 38 MEDLINE on STN
ACCESSION NUMBER: 87166506 MEDLINE
DOCUMENT NUMBER: PubMed ID: 3104383
TITLE: Rapid and sensitive method for measurement of hyaluronic acid and isomeric chondroitin sulfates using high-performance liquid chromatography.
AUTHOR: Gherezghiher T; Koss M C; Nordquist R E; Wilkinson C P
SOURCE: Journal of chromatography, (1987 Jan 23) Vol. 413, pp. 9-15.
Journal code: 0427043. ISSN: 0021-9673.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198705
ENTRY DATE: Entered STN: 3 Mar 1990
Last Updated on STN: 6 Feb 1998
Entered Medline: 13 May 1987

AB A high-performance liquid chromatographic method for the separation and analysis of the unsaturated tetrasaccharide and hexasaccharide from Streptomyces hyaluronidase (S.HAase) enzyme digestion products of hyaluronic acid (HA) and standard unsaturated disaccharides 2-acetamido-2-deoxy-3-O-(beta-D-gluco-4-enepyranosyluronic acid)-D-galactose (delta Di-0S), 2-acetamido-2-deoxy-3-O-(beta-D-gluco-4-enepyranosyluronic acid)-4-O-sulfo-D-galactose (delta Di-4S) and 2-acetamido-2-deoxy-3-O-(beta-D-gluco-4-enepyranosyluronic acid)-6-O-sulfo-D-galactose (delta Di-6S) is described. An amino phase chemically bonded to silica with a particle diameter of 6 micron was used as the column. The composition and the pH of the mobile phase were systematically varied to determine the optimal chromatographic conditions for separation and analysis of the compounds. For HA, a complete separation was accomplished in less than 12 min with a practical detection limit of 100 ng. Separation of the disaccharides also required less than 15 min with detection limits of 10 ng for delta Di-0S and 25 ng each for delta Di-4S and delta Di-6S. This chromatographic method represents a significant improvement over existing methods. It allows the simultaneous separation and analysis of HA and chondroitin sulfate isomers (after digestion of the latter with chondroitinase) at a higher speed, and with more sensitivity and efficiency.

L41 ANSWER 35 OF 38 MEDLINE on STN
ACCESSION NUMBER: 84161857 MEDLINE
DOCUMENT NUMBER: PubMed ID: 6706910
TITLE: Enzymatic determination of free glucuronic acid with glucuronolactone reductase. I. Isolation and purification of glucuronolactone reductase from rat kidney.
AUTHOR: Hayashi S; Watanabe M; Kimura A
SOURCE: Journal of biochemistry, (1984 Jan) Vol. 95, No. 1, pp. 223-32.
Journal code: 0376600. ISSN: 0021-924X.
PUB. COUNTRY: Japan
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198405
ENTRY DATE: Entered STN: 19 Mar 1990
Last Updated on STN: 3 Mar 2000

Entered Medline: 24 May 1984

AB Glucuronolactone reductase [EC 1.1.1.20] from rat kidney was purified over 300-fold by ammonium sulfate fractionation, chromatography on DEAE-cellulose and hydroxylapatite columns, and preparative isoelectric focusing. The substrate specificity of the enzyme in the reduction reaction was broad, and hexuronic acid was one of the best substrates among monosaccharides. Km values for D-glucuronic acid, D-glucuronolactone, D-galacturonic acid, and L-iduronic acid were 6, 9, 4, and 6 mM, respectively. An investigation of the activity for aldose led to the finding that triose and tetrose served as good substrates for this enzyme. However, the activity for aldopentose or aldohexose was less than 1% of that for D-glucuronic acid at the same concentration. The enzyme was inactive towards most hexosamines (galactosamine, mannosamine, N-acetylglucosamine, N-acetylgalactosamine, and N-acetylmannosamine, but not glucosamine), meso-inositol, D-fructose, and tetrasaccharides from hyaluronic acid and chondroitin 4-sulfate. Trisaccharides from hyaluronic acid and chondroitin 6-sulfate which possess glucuronic acid at the reducing end were poor substrates for the enzyme and the activity towards these 4-substituted glucuronic acids was less than 3% of that towards non-substituted glucuronic acid.

L41 ANSWER 36 OF 38 MEDLINE on STN
ACCESSION NUMBER: 81161000 MEDLINE
DOCUMENT NUMBER: PubMed ID: 7213753
TITLE: Purification and properties of human N-acetylgalactosamine-6-sulfate sulfatase.
AUTHOR: Lim C T; Horwitz A L
CONTRACT NUMBER: AM-05996 (NIADDK)
HD-04583 (NICHD)
HD-09402 (NICHD)
SOURCE: Biochimica et biophysica acta, (1981 Feb 13) Vol. 657, No. 2, pp. 344-55.
Journal code: 0217513. ISSN: 0006-3002.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198106
ENTRY DATE: Entered STN: 16 Mar 1990
Last Updated on STN: 6 Feb 1998
Entered Medline: 23 Jun 1981

AB 1. Human N-acetylgalactosamine-6-sulfate sulfatase (EC 3.1.6.-) from human placenta has been purified more than 3000-fold by gel filtration, ion-exchange and substrate affinity chromatography. The enzyme has a molecular weight of 90 000 by gel filtration chromatography and 85 000 by sodium dodecyl sulfate (SDS)-polyacrylamide gel electrophoresis. Enzyme purified from cultured human skin fibroblasts has similar properties. 2. The tritium-labeled chrondroitin 6-sulfate trisaccharide N-acetylgalactosamine 6-sulfate-(beta, 1-4)-glucuronic acid-(beta, 1-3(-N-acetyl[1-3H]galactosaminitol 6-sulfate as substrate demonstrated a Km of 0.12 mM at pH 4.5. Sulfate was hydrolyzed only from the non-reducing terminal of this disulfated trisaccharide. Hyaluronic acid, dermatan sulfate, chondroitin 4-sulfate, heparin and chondroitin 6-sulfate tetrasaccharide were slightly inhibitory, whereas 6-sulfated pentasaccharides and heptasaccharides were strongly inhibitory. The enzyme dose not hydrolyze sulfate from N-acetylglucosamine 6-sulfate.

L41 ANSWER 37 OF 38 MEDLINE on STN
ACCESSION NUMBER: 76120578 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2603
TITLE: Chondroitinase C from Flavobacterium heparinum.
AUTHOR: Michelacci Y M; Dietrich C P

SOURCE: The Journal of biological chemistry, (1976 Feb 25) Vol. 251, No. 4, pp. 1154-8.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197604
ENTRY DATE: Entered STN: 13 Mar 1990
Last Updated on STN: 6 Feb 1998
Entered Medline: 30 Apr 1976

AB A chondroitinase that acts upon chondroitin sulfate C and hyaluronic acid was isolated from Flavobacterium heparinum. This enzyme was seperated from constitutional chondroitinase AC and an induced chondroitinase B also present in extracts of F. heparinum previously grown in the presence of chondroitin sulfates A, B or C. The enzyme acts upon chondroitin sulfate C producing tetrasaccharide plus an unsaturated 6-sulfated disaccharide (delta Di-6S), and upon hyaluronic acid producing unsaturated nonsulfated disaccharide (delta Di-OS). Chondroitin sulfate A is also degraded producing oligosaccharides and delta Di-6S but not delta Di-4S. The chondroitinase C is also distinguished from the chondroitinases B and AC by several properties, such as effect of ions, temperature for optimal activity, and susceptibility to increasing salt concentrations. The substrate specificity of the chondroitinase C is different from that of any other chondroitinase or hyaluronidase described so far.

L41 ANSWER 38 OF 38 MEDLINE on STN
ACCESSION NUMBER: 76021573 MEDLINE
DOCUMENT NUMBER: PubMed ID: 240644
TITLE: Effect of ionic strength and pH on the properties of purified bovine testicular hyaluronidase.
AUTHOR: Gorham S D; Olavesen A H; Dodgson K S
SOURCE: Connective tissue research, (1975) Vol. 3, No. 1, pp. 17-25.
Journal code: 0365263. ISSN: 0300-8207.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197601
ENTRY DATE: Entered STN: 13 Mar 1990
Last Updated on STN: 6 Feb 1998
Entered Medline: 2 Jan 1976

AB Studies on the effect of pH and ionic strength upon the activity of purified bovine testicular hyaluronidase have shown that the pH optimum for the hydrolysis of hyaluronic acid occurs at 5.2 in the presence of, and at 6.0 in the absence of NaCl. Hydrolytic activity towards various mucopolysaccharide and hyaluronate octasaccharide substrates was dependent upon the presence of strong electrolyte (LiCl, NaCl, KCl, CsCl, NaNO3 and Na2SO4), maximum activity being obtained at electrolyte strengths of 0.2. Identical weights of sulphated and unsulphated mucopolysaccharides were hydrolysed at similar rates under optimal conditions, except that double chains of chondroitin 4-sulphate were hydrolysed at twice the rate of the other polysaccharides. Hydrolytic activity towards hyaluronate hexasaccharide was favoured at pH values below 5.2 whereas transglycosylation activity was favoured at higher pH. Hyaluronate tetrasaccharide was neither a substrate for the hydrolytic or transglycosylation activity, nor was it an inhibitor of the enzymic hydrolysis of hyaluronic acid. No conformational change in hyaluronic acid was detected by CD-spectroscopy in the presence of varying concentrations of salt and the collective results suggest that the salt effect is exerted on the enzyme rather than on the substrate.

L41 ANSWER 18 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1990:204455 CAPLUS
DOCUMENT NUMBER: 112:204455
TITLE: Skin-lightening, moisturizing, and sunscreening cosmetics containing hyaluronic acid hydrolyzates
INVENTOR(S): Honda, Goro
PATENT ASSIGNEE(S): Tokyo Sankei Kagaku Y. K., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01272511	A	19891031	JP 1988-98798	19880421

PRIORITY APPLN. INFO.: JP 1988-98798 19880421

AB Skin-lightening, moisturizing, and sunscreening cosmetics contain (i) tetrasaccharide, disaccharide, hexasaccharide, and/or deoxydisaccharide prepared by treatment of hyaluronic acid (salts) with testicular or bacterial hyaluronidase or (ii) ring-cleavaged disaccharides. The oligosaccharides have good moisturizing, tyrosinase-inhibiting, and UV-absorbing effects, show good storage-stability, and give no side effects. A hair preparation comprised EtOH 55.0, purified castor oil 10.0, salicylic acid 0.3, surfactant 1.0, oligosaccharides 2.0, perfume, colorant, and H2O to 100%.

L41 ANSWER 19 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1989:3388 CAPLUS
DOCUMENT NUMBER: 110:3388
TITLE: Purification and characterization of hyaluronidase from Bacteroides oralis
AUTHOR(S): Shibata, Yukinaga; Shimura, Ryuji; Fujimura, Setsuo; Nakamura, Takeshi
CORPORATE SOURCE: Dep. Oral Microbiol., Matsumoto Dent. Coll., Shiojiri, Japan
SOURCE: Matsumoto Shigaku (1988), 14(1), 58-65
CODEN: MATSDE; ISSN: 0385-1613
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB From culture supernatant of B. oralis ATCCC 33269, hyaluronidase was purified to homogeneity by ammonium sulfate precipitation, DEAE-cellulose column chromatog., gel filtration on Sephacryl S-300, and hydroxylapatie column chromatog. Specific activity increased 12,000 fold and recovery was 5.8%. The mol. weight was determined to be 75,000 by gel filtration, and the isoelec. point was 7.6. The optimum pH for the activity was 5.5. The purified hyluronidase degraded hyaluronic acid, but it had no activity against chondroitin, chondroitin sulfate A, BC, heparin, and heparan sulfate. From degradation products of hyaluronic acid, unsatd. tetrasaccharides and disaccharides were detected by paper chromatog.

L41 ANSWER 20 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1987:152335 CAPLUS
DOCUMENT NUMBER: 106:152335
TITLE: Rapid and sensitive method for measurement of hyaluronic acid and isomeric chondroitin sulfates using high-performance liquid chromatography
AUTHOR(S): Gherezghiher, Tseggai; Koss, Michael C.; Nordquist, Robert E.; Wilkinson, Charles P.
CORPORATE SOURCE: Dean A. McGee Eye Inst., Univ. Oklahoma, Oklahoma

City, OK, 73104, USA
SOURCE: Journal of Chromatography (1987), 413, 9-15
CODEN: JOCRAM; ISSN: 0021-9673
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A HPLC method for the separation and anal. of the unsatd. tetrasaccharide and hexasaccharide from Streptomyces hyaluronidase (S.HAse) enzyme digestion products of hyaluronic acid (HA) and standard unsatd. disaccharides 2-acetamido-2-deoxy-3-O-(β-D-gluco-4-enepyranosyluronic acid)-D-galactose (ΔDi-0S), 2-acetamido-2-deoxy-3-O-(β-D-gluco-4-enepyranosyluronic acid)-4-O-sulfo-D-galactose (ΔDi-4S), and 2-acetamido-2-deoxy-3-O-(β-D-gluco-4-enepyranosyluronic acid)-6-O-sulfo-D-galactose (ΔDi-6S) is described. An amino phase chemical bonded to silica with a particle diameter of 6 μm was used as the column. The composition and the pH of the mobile phase were systemically varied to determine the optimal chromatog. conditions for separation and anal. of the compds. For HA, a complete separation was accomplished in <12 min with a practical detection limit of 100 ng. Separation of the disaccharides also required <15 min with detection limits of 10 ng for ΔDi-0S and 25 ng each for ΔDi-4S and ΔDi-6S. This chromatog. method represents a significant improvement over existing methods. It allows the simultaneous separation and anal. of HA and chondroitin sulfate isomers (after digestion of the latter with chondroitinase) at a higher speed, and with more sensitivity and efficiency.

L41 ANSWER 21 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1984:98841 CAPLUS
DOCUMENT NUMBER: 100:98841
TITLE: Enzymic determination of free glucuronic acid with glucuronolactone reductase. I. Isolation and purification of glucuronolactone reductase from rat kidney
AUTHOR(S): Hayashi, Shiro; Watanabe, Minoru; Kimura, Atsushi
CORPORATE SOURCE: Fukushima Biomed. Inst. Environ. Neoplast. Dis., Fukushima, 979-13, Japan
SOURCE: Journal of Biochemistry (Tokyo, Japan) (1984), 95(1), 223-32
CODEN: JOBIAO; ISSN: 0021-924X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Glucuronolactone reductase [EC 1.1.1.20] from rat kidney was purified >300-fold by (NH4)2SO4 fractionation, chromatog. on DEAE-cellulose and hydroxylapatite columns, and preparative isoelec. focusing. The substrate specificity of the enzyme in the reduction reaction was broad, and hexuronic acid was one of the best substrates among monosaccharides. Km Values for D-glucuronic acid, D-glucuronolactone, D-galacturonic acid, and L-iduronic acid were 6, 9, 4, and 6 mM, resp. Triose and tetrose served as good substrates for this enzyme. However, the activity for aldopentose or aldohexose was <1% of that for D-glucuronic acid at the same concentration The enzyme was inactive towards most hexosamines (galactosamine, mannosamine, N-acetylglucosamine, N-acetylgalactosamine, and N-acetylmannosamine, but not glucosamine), meso-inositol, D-fructose, and tetrasaccharides from hyaluronic acid and chondroitin 4-sulfate.
Trisaccharides from hyaluronic acid and chondroitin 6-sulfate which possess glucuronic acid at the reducing end were poor substrates for the enzyme and the activity towards these 4-substituted glucuronic acids was <3% of that towards nonsubstituted glucuronic acid.

L41 ANSWER 22 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1981:152383 CAPLUS
DOCUMENT NUMBER: 94:152383
TITLE: Purification and properties of human N-acetylgalactosamine-6-sulfate sulfatase

AUTHOR(S): Lim, Chang T.; Horwitz, Allen L.
CORPORATE SOURCE: Pritzker Sch. Med., Univ. Chicago, Chicago, IL, 60637, USA
SOURCE: Biochimica et Biophysica Acta, Enzymology (1981), 657(2), 344-55
CODEN: BBEZAD; ISSN: 0924-1086
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Human N-acetylgalactosamine-6-sulfate sulfatase from human placenta was purified >3000-fold by gel filtration, ion-exchange, and substrate affinity chromatog. The enzyme has a mol. weight of 90,000 by gel filtration chromatog. and 85,000 by SDS-polyacrylamide gel electrophoresis. Enzyme purified from cultured human skin fibroblasts has similar properties. The 3H-labeled chondroitin 6-sulfate trisaccharide N-acetylgalactosamine 6-sulfate-(β,1-4)-glucuronic acid-(β,1-3)-N-acetyl[1-3H]galactosaminitol 6-sulfate as substrate demonstrated a Km of 0.12 mM at pH 4.5. Sulfate was hydrolyzed only from the nonreducing terminal of this disulfated trisaccharide. Hyaluronic acid, dermatan sulfate, chondroitin 4-sulfate, heparin, and chondroitin 6-sulfate tetrasaccharide were slightly inhibitory, whereas 6-sulfated pentasaccharides and heptasaccharides were strongly inhibitory. The enzyme does not hydrolyze sulfate from N-acetylglucosamine 6-sulfate.

L41 ANSWER 23 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1976:101378 CAPLUS
DOCUMENT NUMBER: 84:101378
TITLE: Chondroitinase C from Flavobacterium heparinum
AUTHOR(S): Michelacci, Yara M.; Dietrich, Carl P.
CORPORATE SOURCE: Dep. Bioquim. Farmacol., Esc. Paulista Med., Sao Paulo, Brazil
SOURCE: Journal of Biological Chemistry (1976), 251(4), 1154-8
CODEN: JBCHA3; ISSN: 0021-9258
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A chondroitinase that acts upon chondroitin sulfate C and hyaluronic acid was isolated from F. heparinum. This enzyme was separated from a constitutional chondroitinase AC and an induced chondroitinase B also present in exts. of F. heparinum previously grown in the presence of chondroitin sulfates A, B, or C. The enzyme acted upon chondroitin sulfate C producing tetrasaccharide plus an unsatd. 6-sulfated disaccharide (I), and upon hyaluronic acid producing unsatd. nonsulfated disaccharide. Chondroitin sulfate A was also degraded producing oligosaccharides and I but not unsatd. 4-sulfated disaccharide. Chondroitinase C was also distinguished from chondroitinases B and AC by several properties, such as effect of ions, temperature for optimal activity, and susceptibility to increasing salt concns. The substrate specificity of chondroitinase C was different from that of any other chondroitinase or hyaluronidase previously described.

L41 ANSWER 24 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1967:450362 CAPLUS
DOCUMENT NUMBER: 67:50362
ORIGINAL REFERENCE NO.: 67:9426h,9427a
TITLE: Structure of human skeletal keratosulfate. The linkage region
AUTHOR(S): Bray, Bonnie A.; Lieberman, Ruth; Meyer, Karl
CORPORATE SOURCE: Coll. of Phys. and Surg., Columbia Univ., New York, NY, USA
SOURCE: Journal of Biological Chemistry (1967), 242(14), 3373-80
CODEN: JBCHA3; ISSN: 0021-9258
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Keratosulfate (KS II) from old human rib cartilage was fractionated into 2

fractions on Bio-Gel P-6 resin. Glutamic acid or glutamine, serine, proline, and galactosamine were concentrated in the higher-mol.-weight fraction, whereas aspartic acid or asparagine was concentrated in the retarded peak. During alkaline treatment the higher-mol.-weight fraction became polydisperse through breaking of bonds involving N-acetylgalactosamine as well as serine and threonine. Studies of the action of alkali on KS II in the presence and absence of borohydride led to the following conclusions: (a) the predominant O-glycosyl group linked to the hydroxyamino acids appears to be N-acetylgalactosamine; (b) a direct Ehrlich's chromogen is produced during the alkaline elimination, which parallels the decrease in serly and threonyl groups; (c) when KS II or a product of KS II produced by partial hydrolysis with N HOAc is treated with alkali in the presence of borohydride at 24°, a new ninhydrinpos. fraction is produced after hydrolysis in HCl. This is presumably derived from a 3-substituted N-acetylgalactosamine. The same fraction appears when N-acetylchondrosine or a tetrasaccharide derived from chondroitin 6-sulfate is treated with alkaline borohydride but not when a tetrasaccharide of hyaluronic acid is thus treated. The unknown derivative of N-acetylgalactosamine apparently is a reduction product of the unsatd. chromogen I postulated by Kuhn (K. and Krueger, CA 51: 5747f). The chromogen produced by alkaline elimination appears to be still attached to a high-mol.-weight product. Therefore, it must be linked in the original substance via an O-glycosidic bond to the hydroxyl groups of the hydroxyamino acids; it is substituted in position 3 and is further linked to position 6 by an alkali-stable bond. The methylpentose of KS II was isolated and characterized as fucose by its methylphenylhydrazone. 24 references.

L41 ANSWER 25 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1967:448861 CAPLUS
DOCUMENT NUMBER: 67:48861
ORIGINAL REFERENCE NO.: 67:9155a,9158a
TITLE: Conformation of some pyranose moieties in the molecules of α-D-hexopyranosyl phosphates, purine and pyrimidine 5'-(α-D-pyranosyl pyrophosphates), and mucopolysaccharides
AUTHOR(S): Onodera, Konoshin; Hirano, Shigehiro
CORPORATE SOURCE: Univ. Kyoto, Kyoto, Japan
SOURCE: Biochemical and Biophysical Research Communications (1966), 25(2), 239-45
CODEN: BBRCA9; ISSN: 0006-291X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB cf. CA 65: 13811g. Conformations are deduced from N.M.R. spectra. H-1 shifts (δ values, ppm. downfield from 2,2-dimethylsilapentane 5-sulfonate; d, doublet; q, quartet) and spin coupling consts. J12 and J1P for the D-ribopyranose component and H-1 shifts and J12 for the D-ribofuranose component are given in this order: α-D-Mannopyranosylphosphate cyclohexylammonium salt 5.34q, 1.5, 8.5, -, -; α,D-glucopyranosyl phosphate K salt 5.40q, 3.0, 7.0, -, -; α-D-galactopyranosyl phosphate Na salt 5.68q, ≈1.0, 7.0, -, -; guanosine 5'-(α-D-mannopyranosyl pyrophosphate) Ba salt 5.61q, .apprx.1.0, 7.5, 5.90d, 5.0; uridine 5'-(α-D-glucopyranosyl pyrophosphate) Li salt 5.61q, 3.0, 7.0, 5.98d, 4.0; uridine 5'-(2-acetamido-2-deoxy-α-D-glucopyranosyl pyrophosphate) Na salt 5.62q, 3.0, 7.0, 5.98d, 4.0; uridine 5'-(α-D-glucopyranosyluronic acid pyrophosphate) Na salt 5.62q, 3.0, 7.0, 5.98d, 4.0; guanosine 5'-monophosphate Na salt -, -, -, 5.91d, 5.0; uridine 5'-monophosphate Na salt -, -, -, 5.98d, 4.0. Attention is directed to the small J12 for derivs. of D-mannose, indicative of the Cl conformation, whereas both Cl and 1C have been found previously. For assignment of N.M.R. spectra in polysaccharides, use was made of N-acetylation. The following N-acetyl-methyl signals (δ, Me3Si standard if in CDCl3) were

tabulated: methyl 2-acetamido-2-deoxy-α-D-galactopyranoside 2.02, methyl 2-acetamido-6-O-acetyl-2-deoxy-α-D-galactopyranoside 4-sulfate Ba salt 2.02, methyl 2-acetamido-6-O-acetyl-2-deoxy-3,6-di-O-methylsulfonyl-α-D-galactopyranoside in CDCl3 2.02, methyl 2-acetamido-4,6-O-benzylidene-2-deoxy-3-O-methylsulfonyl-α-D-glucopyranoside in CDCl3 2.07, 2-acetamido-2-deoxy-D-mannopyranose 2.11, phenyl 2-acetamido-2-deoxy-3,4,6-tri-O-acetyl-α-D-mannopyranoside in CDCl3 2.10, phenyl 2-acetamido-2-deoxy-α-D-mannopyranoside 2.11, chondroitin methyl ester from chondroitin 6-sulfate, 2.00 and 2.10, chondroitin 4-sulfate Ca salt 2.03, chondroitin 6-sulfate Ca salt 2.00, desulfated keratosulfate 2.03, tetrasaccharide from hyaluronic acid 2.01, uridine 5'-(2-acetamido-2-deoxy-α-D-glucopyranosyl pyrophosphate) 2.07. The N-acetyl-methyl signal in axial orientation appeared at δ 2.10-2.15 and in equatorial orientation at 2.00-2.07. The chondroitin derivative with two peaks showed a ratio of equatorial to axial 3:2.

L41 ANSWER 26 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1962:411033 CAPLUS
DOCUMENT NUMBER: 57:11033
ORIGINAL REFERENCE NO.: 57:2295c-g
TITLE: The hexosaminidic linkage of hyaluronic acid
AUTHOR(S): Hirano, Shigehiro; Hoffman, Philip
CORPORATE SOURCE: Columbia Univ.
SOURCE: Journal of Organic Chemistry (1962), 27, 395-8
CODEN: JOCEAH; ISSN: 0022-3263
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB Exhaustive digestion of unbilical cord hyaluronic acid with testicular hyaluronidase and separation on an ion exchange column (Hoffman, et al., CA 50, 9478e) gave an amorphous product (I) identical with the cryst, tetrasaccharide of Welssmann, et al. (C.4 48, 12191h). Addition of 30 ml. Me2SO4 slowly to 1.70 g. I in 20 ml. H2O and 10 ml. CCl4 under N at 0° then 45 ml. 40% NaOH during 5 hrs., letting stand overnight, subsequent treatment at 0° with Me2SO4 (62 ml., 2 hrs.), 40% NaOH (100 ml., 5 hrs.), Me2SO4 (62 ml., 24 hrs.), stirring 12 hrs. at 25°, solution of the CHCl3-soluble sirup in 3 ml. MeOH, and shaking with 25 ml. MeI and 3 g. Ag2O 27 hrs. gave a sirup showing strong Me ester band at 1730 cm.-1 Reduction with 8 ml. of 0.94M LiBH4 in tetrahydrofuran 20 hrs. at 25° and two methylations with MeI and Ag2O (the 2nd under reflux 11 hrs.) gave 1.25 g. permethylated reduced tetrasaccharide (II), containing 40.6% OMe, and no OH absorption at 3200-300 cm.-1. Hydrolysis of 1.25 g. II 3 hrs. in 50 ml. 2% HCl in MeOH and fractionation on Dowex 50(H+) column gave a neutral fraction, separated on Whatman 3MM paper with EtCOMe-H2O into 0.18 g. 2,3,6-tri-O-methyl-α-D-glucose, m. 109-12°, [α]24D 78 → 67° (c 0.8, H2O), and 0.23 g. 2,3,4,6tetra-O-methyl-D-glucose, isolated as the N-phenylglucosyl amine derivative, m. 135-7°. Elution of the Dowex resin with N H2SO4 and separation on Schleicher and Schuell 470 paper with 4:1:1 BuOH:EtOH:H2O gave 0.18 g. 2-amino-2-deoxy4,6-di-O-methyl-α-D-glucose, isolated as 2-acetamido-2-deoxy4,6-di-O-methyl-α-D-glucopyranose, m. 220-2°, [α]19D 97°. (e 0.2, MeOH), and 0.19 g. Me 2-amino-2-deoxy-4,6-di-O-methyl-D-glucoside, isolated as Me 2-acetamido-2-deoxy4,6-di-O-methyl-α-D-glucopyranoside, m, 205-6°. It was concluded that the 2-acetamido-2-deoxy-D-glucose moiety in I was linked (1 → 4) to the D-glucuronic acid.

L41 ANSWER 27 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1957:22105 CAPLUS
DOCUMENT NUMBER: 51:22105
ORIGINAL REFERENCE NO.: 51:4470a-c
TITLE: Oligosaccharide as the intermediate and end product of the enzymic catabolism of hyaluronidase
AUTHOR(S): Schuette, Ernst; Greiling, Helmut

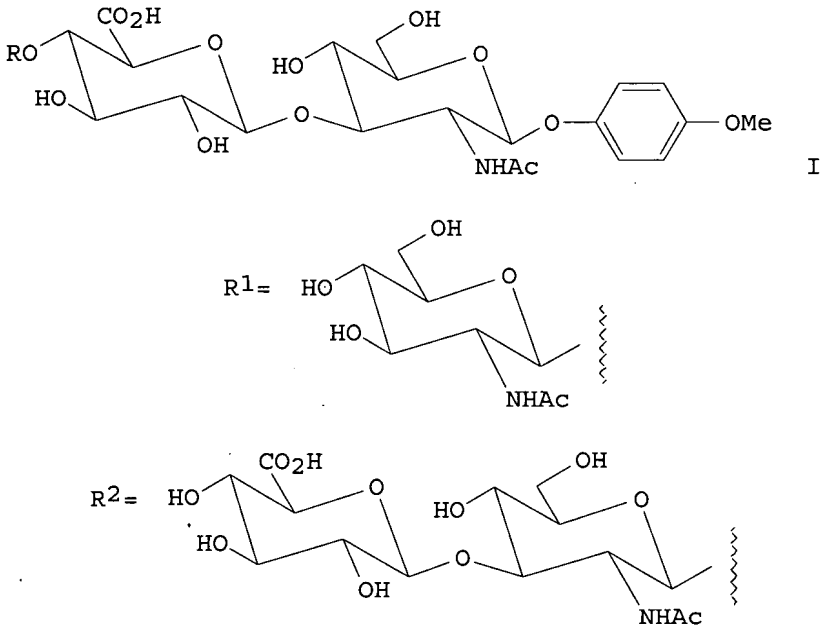
CORPORATE SOURCE: Freie Univ., Berlin
SOURCE: Hoppe-Seyler's Zeitschrift fuer Physiologische Chemie (1955), 302, 55-62
CODEN: HSZPAZ; ISSN: 0018-4888
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB Oligosaccharides, degraded almost completely to a disaccharide, are formed in the enzymic hydrolysis of hyaluronic acid with bacterial hyaluronidase. These oligosaccharides were found to be somewhat different from the oligosaccharides produced by the prolonged action of testicular hyaluronidase on hyaluronic acid. From the hydrolyzate of hyaluronic acid with bacterial hyaluronidase was obtained an oligosaccharide IIB, Rf 0.34, in crystalline form, and an amorphous saccharide IB, Rf 0.45. The Rf values, the analytical data for glycosamine, N-acetylglycosamine, and glycuronic acid, and their reducing equivalents support the view that IB is a disaccharide, and IIB a tetrasaccharide consisting of equal parts of N-acetylglucosamine and glucuronic acid.

L41 ANSWER 10 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1995:258871 CAPLUS
DOCUMENT NUMBER: 123:170004
TITLE: Synthesis of hyaluronic acid related di- and tetrasaccharides having a glucuronic acid at the reducing end
AUTHOR(S): Slaghek, Ted M.; Hypponen, Teija K.; Ogawa, Tomoya; Kamerling, Johannis P.; Vliegenthart, Johannes F. G.
CORPORATE SOURCE: Dep. of Bio-Organic Chem., Utrecht Univ., Utrecht, NL-2508 TB, Neth.
SOURCE: Tetrahedron: Asymmetry (1994), 5(11), 2291-301
CODEN: TASYE3; ISSN: 0957-4166
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB 4-Methoxyphenyl O-2-acetamido-2-deoxy-β-D-glucopyranosyl-(1→4)-β-D-glucopyranosiduronic acid (I) and 4-methoxyphenyl O-2-acetamido-2-deoxy-β-D-glucopyranosyl-(1→4)-O-β-D-glucopyranuronosyl-(1→3)-O-2-acetamido-2-deoxy-β-D-glucopyranosyl-(1→4)-β-D-glucopyranosiduronic acid (II), which represent structural elements of hyaluronic acid, were prepared 3,4,6-Tri-O-acetyl-2-deoxy-2-phthalimido-β-D-glucopyranosyl trichloroacetimidate was condensed with 4-methoxyphenyl 6-O-levulinoyl-2,3-di-O-p-toluoyl-β-D-glucopyranoside (III) to give the expected β-(1→4)-linked disaccharide (IV). Subsequent delevulinoylation, oxidation, complete deprotection, and N-acetylation gave I. Coupling of 3-O-allyloxycarbonyl-2-deoxy-4,6-O-isopropylidene-2-phthalimido-β-D-glucopyranosyl trichloroacetimidate with III, followed by de-allyloxycarbonylation of the obtained disaccharide derivative gave 4-methoxyphenyl O-2-deoxy-4,6-O-isopropylidene-2-phthalimido-β-D-glucopyranosyl-(1→4)-6-O-levulinoyl-2,3-di-O-p-toluoyl-β-D-glucopyranoside (V). Demethoxyphenylation and subsequent imidation of IV afforded O-3,4,6-tri-O-acetyl-2-deoxy-2-phthalimido-β-D-glucopyranosyl-(1→4)-6-O-levulinoyl-2,3-di-O-p-toluoyl-α/β-D-glucopyranosyl trichloroacetimidate (VI). Condensation of V with VI, followed by deisopropylidenation, O-acetylation, delevulinoylation, oxidation, complete deprotection, and N-acetylation of the obtained tetrasaccharide derivative gave II.

L41 ANSWER 11 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1994:649310 CAPLUS
DOCUMENT NUMBER: 121:249310
TITLE: Kinetic and mechanistic studies with bovine testicular hyaluronidase
AUTHOR(S): Cramer, Jeffrey A.; Bailey, Leonard C.; Bailey, Carole A.; Miller, Robert T.
CORPORATE SOURCE: Coll. Pharm., Rutgers, State Univ., Piscataway, NJ, 08855-0789, USA
SOURCE: Biochimica et Biophysica Acta, General Subjects (1994), 1200(3), 315-21
CODEN: BBGSB3; ISSN: 0304-4165
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Bovine testicular hyaluronidase (EC 3.2.1.35) exhibits hydrolase and transglycosylase activities. To assess the magnitude of each type of reaction, the time-course of hyaluronidase-catalyzed hyaluronic acid degradation was followed using a sensitive and specific HPLC method. The Km and Vmax values were calculated for purified short-chain hyaluronic acid oligomers and native hyaluronic acid based on the appearance of unreactive hyaluronic acid tetrasaccharide. For hyaluronic acid oligomers, as the substrate size increased the Km decreased from 2.06 to 1.09 mM while the Vmax

remained about the same, indicating a 5-fold increase in the enzyme-substrate association constant, k1(kcat/Km). The values of k2(kcat), the enzyme-substrate dissociation constant, for native hyaluronic acid and hyaluronic acid decasaccharide were similar. The value of k1 for native hyaluronic acid, however, was larger by 70-fold. Kinetic degradation mechanisms for each hyaluronic acid oligomer, using chemical-reaction kinetics, were proposed and evaluated by computer curve fitting anal. of the exptl. time vs. concentration data. The derived rate consts., together with mass balance calcns., revealed that transglycosylation plays a significant role in the degradation of all hyaluronic acid oligomers studied.

L41 ANSWER 12 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1994:631218 CAPLUS
DOCUMENT NUMBER: 121:231218
TITLE: Synthesis of oligosaccharides related to hyaluronic acid. 2. Synthesis of hyaluronic acid-related di-, tri-, and tetrasaccharides having an N-acetylglucosamine residue at the reducing end
AUTHOR(S): Slaghek, Ted M.; Nakahara, Yoshiaki; Ogawa, Tomoya; Kamerling, Johannis P.; Vliegenthart, Johannes F. G.
CORPORATE SOURCE: Bijvoet Cent., Utrecht Univ., Utrecht, 3508 TB, Neth.
SOURCE: Carbohydrate Research (1994), 255, 61-85
CODEN: CRBRAT; ISSN: 0008-6215
DOCUMENT TYPE: Journal
LANGUAGE: English
GI



AB The synthesis of di-, tri-, and tetrasaccharide I (R = H, R1, R2), which are structural elements of the extracellular polysaccharide hyaluronic acid, is reported.

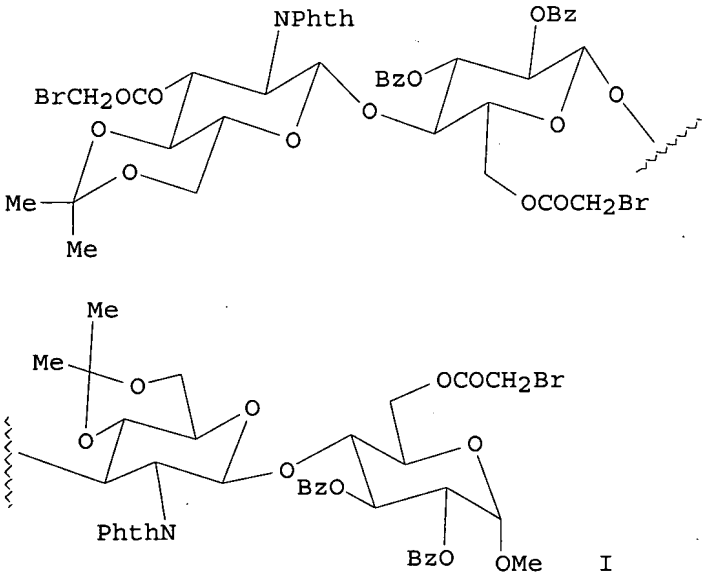
L41 ANSWER 13 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1994:218359 CAPLUS

DOCUMENT NUMBER: 120:218359
TITLE: Synthesis of a tetrasaccharide fragment of hyaluronic acid having a glucuronic acid at the reducing end. Part 3
AUTHOR(S): Slaghek, Ted M.; Hyppoenen, Teija K.; Ogawa, Tomoya; Kamerling, Johannis P.; Vliegenthart, F. G.
CORPORATE SOURCE: Bijvoet Cent., Utrecht Univ., Utrecht, 3508 TB, Neth.
SOURCE: Tetrahedron Letters (1993), 34(49), 7939-42
CODEN: TELEAY; ISSN: 0040-4039
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 120:218359
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB A stereocontrolled synthesis of a tetrasaccharide fragment of hyaluronic acid, β-p-methoxyphenyl glycoside of β-D-GlcNAc-(1→4)-β-D-GlcA-(1→3)-β-D-GlcNAc-(1→4)-D-GlcA, was carried out in a highly stereoselective glycosidation reaction by using one monosaccharide acceptor I and two monosaccharide donors II and III.

L41 ANSWER 14 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1993:650326 CAPLUS
DOCUMENT NUMBER: 119:250326
TITLE: Syntheses of oligosaccharides having the β-D-GlcpNAc-(1→4)-D-Glc- structure
AUTHOR(S): Klaffke, Werner; Warren, Christopher D.; Jeanloz, Roger W.
CORPORATE SOURCE: Dep. Biol. Chem., Harvard Med. Sch., Charlestown, MA, 02129, USA
SOURCE: Carbohydrate Research (1993), 244(1), 171-9
CODEN: CRBRAT; ISSN: 0008-6215
DOCUMENT TYPE: Journal
LANGUAGE: English
GI



I

AB The synthesis of tetrasaccharide I fragment of hyaluronic acid, is described.

L41 ANSWER 15 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1993:255239 CAPLUS
DOCUMENT NUMBER: 118:255239
TITLE: NMR studies of a tetrasacchride from hyaluronic acid
AUTHOR(S): Livant, Peter; Roden, Lennart; Krishna, N. Rama
CORPORATE SOURCE: Compr. Cancer Cent., Univ. Alabama, Birmingham, AL, 35294, USA
SOURCE: Carbohydrate Research (1992), 237, 271-81
CODEN: CRBRAT; ISSN: 0008-6215
DOCUMENT TYPE: Journal
LANGUAGE: English
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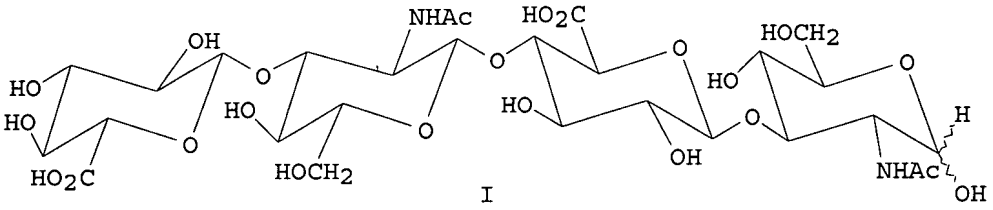

I

AB The sequence-specific assignment of 1H and 13C NMR in aqueous solution for the individual sugar unit of tetrasaccharide I from hyaluronic acid, is described.

L41 ANSWER 16 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1993:250843 CAPLUS
DOCUMENT NUMBER: 118:250843
TITLE: Hyaluronidase degradation of hyaluronic acid from different sources: Influence of the hydrolysis conditions on the production and the relative proportions of tetra- and hexasaccharide produced
AUTHOR(S): Payan, E.; Jouzeau, J. Y.; Lapicque, F.; Muller, N.; Netter, P.
CORPORATE SOURCE: Lab. Pharmacol., Fac. Med., Vandoeuvre les Nancy, 54505, Fr.
SOURCE: International Journal of Biochemistry (1993), 25(3), 325-9
CODEN: IJBOBV; ISSN: 0020-711X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Hyaluronic acid (HA) can be digested with a Streptomyces hyaluronidase. The rate of production and the ratio of tetrasaccharide (T) and hexasaccharide (H), studied by HPLC, varied with the temperature and duration of hydrolysis. The rates of production and the resp. amts. of the two oligosaccharides depended on the rheol. properties of the HA from different sources. A close relationship was found between the initial rate of hydrolysis and the intrinsic viscosity of the HA (ηi). Enzymic degradation at a given pH value, temperature, and duration of hydrolysis is dependent on the conformation of HA. Moreover, under given conditions, the relative proportions of the two oligosaccharides depend on the ηi and may also reflect the degree of hydrolysis of the substrate.

L41 ANSWER 1 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2007:106382 CAPLUS
DOCUMENT NUMBER: 146:353453
TITLE: Quantitative continuous assay for hyaluronan synthase
AUTHOR(S): Krupa, Joanne C.; Shaya, David; Chi, Lianli; Linhardt, Robert J.; Cygler, Miroslaw; Withers, Stephen G.; Mort, John S.
CORPORATE SOURCE: Joint Diseases Laboratory, Shriners Hospital for Children, Montreal, QC, H3G 1A6, Can.
SOURCE: Analytical Biochemistry (2007), 361(2), 218-225
CODEN: ANBCA2; ISSN: 0003-2697
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A rapid, continuous, and convenient three-enzyme coupled UV absorption assay was developed to quantitate the glucuronic acid and N-acetylglucosamine transferase activities of hyaluronan synthase from Pasteurella multocida (PmHAS). Activity was measured by coupling the UDP produced from the PmHAS-catalyzed transfer of UDP-GlcNAc and UDP-GlcUA to a hyaluronic acid tetrasaccharide primer with the oxidation of NADH. Using a fluorescently labeled primer, the products were characterized by gel electrophoresis. Our results show that a truncated soluble form of recombinant PmHAS (residues 1-703) can catalyze the glycosyl transfers in a time- and concentration-dependent manner. The assay can be used to determine kinetic parameters, inhibition consts., and mechanistic aspects of this enzyme. In addition, it can be used to quantify PmHAS during purification of the enzyme from culture media.
REFERENCE COUNT: 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 2 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:817718 CAPLUS
DOCUMENT NUMBER: 141:307584
TITLE: Remedy for nerve damage containing glucuronic acid and/or N-acetylglucosamine-containing low-molecular weight saccharides
INVENTOR(S): Kato, Tadahiko; Asari, Akira
PATENT ASSIGNEE(S): Seikagaku Corporation, Japan
SOURCE: PCT Int. Appl., 36 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004084912	A1	20041007	WO 2004-JP4240	20040325
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2004224510	A1	20041007	AU 2004-224510	20040325
CA 2519797	A1	20041007	CA 2004-2519797	20040325
EP 1611893	A1	20060104	EP 2004-723399	20040325

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK

CN 1794999	A	20060628	CN 2004-80014299	20040325
US 2006135439	A1	20060622	US 2005-550998	20051024
PRIORITY APPLN. INFO.:			JP 2003-83831 A	20030325
			WO 2004-JP4240 W	20040325

AB It is intended to provide a remedy for nerve damage caused by spinal injury, nerve trauma or the like which contains, as the active ingredient, a low-mol. weight saccharide at least having glucuronic acid and/or N-acetylglucosamine as the constituting sugar(s) or a pharmaceutically acceptable salt thereof. Preferably, a remedy for nerve damage which contains, as the active ingredient, a low-mol. weight hyaluronic acid (still preferably hyaluronic acid disaccharide to hyaluronic acid 2500-saccharide, still preferably hyaluronic acid disaccharide to hyaluronic acid 50-saccharide, particularly preferably hyaluronic acid tetrasaccharide) or a pharmaceutically acceptable salt thereof. The effect of hyaluronic acid tetrasaccharide (HA4) in spiral injury model rats was examined

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 3 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:460555 CAPLUS
DOCUMENT NUMBER: 139:30812
TITLE: Fas antigen expression and apoptosis induction enhancers containing hyaluronic acid tetrasaccharides (salts) for treatment of tumor and rheumatoid arthritis
INVENTOR(S): Nakano, Kazuhisa; Tanaka, Yoshiya
PATENT ASSIGNEE(S): Seikagaku Kogyo Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003171282.	A	20030617	JP 2001-376168	20011210
PRIORITY APPLN. INFO.:			JP 2001-376168	20011210

AB Title enhancers are claimed. Thus, GlcA-GlcNAc-GlcA-GlcNAc (GlcA = glucuronic acid residue; GlcNac = N-acetylglucosamine residue) at 2 μg/ML significantly enhanced expression of Fas antigen on synovial membrane isolated from RA patient.

L41 ANSWER 4 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:445165 CAPLUS
DOCUMENT NUMBER: 137:181470
TITLE: Carriers for enzymatic attachment of glycosaminoglycan chains to peptide
AUTHOR(S): Takagaki, Keiichi; Ishido, Keinosuke; Kakizaki, Ikuko; Iwafune, Mito; Endo, Masahiko
CORPORATE SOURCE: Department of Biochemistry, Hirosaki University School of Medicine, Hirosaki, 036-8562, Japan
SOURCE: Biochemical and Biophysical Research Communications (2002), 293(1), 220-224
CODEN: BBRCA9; ISSN: 0006-291X
PUBLISHER: Elsevier Science
DOCUMENT TYPE: Journal
LANGUAGE: English

AB In the previous study, we have found that the endo-β-xylosidase from

Patinopecten had the attachment activities of glycosaminoglycan (GAG) chains to peptide. As artificial carrier substrates for this reaction, synthesis of various GAG chains having the linkage region tetrasaccharide, GlcAβ1-3Galβ1-3Galβ1-4Xyl, between GAG chain and core protein of proteoglycan was investigated. Hyaluronic acid (HA), chondroitin (Ch), chondroitin 4-sulfate (Ch4S), chondroitin 6-sulfate (Ch6S), and desulfated dermatan sulfate (desulfated DS) as donors and the 4-metylumbelliferone (MU)-labeled hexasaccharide having the linkage region tetrasaccharide at its reducing terminals (MU-hexasaccharide) as an acceptor were subjected to a transglycosylation reaction of testicular hyaluronidase. The products were analyzed by high-performance liquid chromatog. and enzyme digestion, and the results indicated that HA, Ch, Ch4S, Ch6S, and desulfated DS chains elongated by the addition of disaccharide units to the nonreducing terminal of MU-hexasaccharide. It was possible to custom-synthesize various GAG chains having the linkage region tetrasaccharide as carrier substrates for enzymic attachment of GAG chains to peptide.

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 5 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:186253 CAPLUS

TITLE: Synthesis of C-/O-linked hyaluronic acid (HA) tetrasaccharide mimetics as antimetastatic agents

AUTHOR(S): Ren, Zhong-Xu; Yang, Qiang; Welch, Karen T.; Baker, David C.

CORPORATE SOURCE: Department of Chemistry, University of Tennessee, Knoxville, TN, 37996-1600, USA

SOURCE: Abstracts of Papers, 223rd ACS National Meeting, Orlando, FL, United States, April 7-11, 2002 (2002), CARB-008. American Chemical Society: Washington, D. C.
CODEN: 69CKQP

DOCUMENT TYPE: Conference; Meeting Abstract

LANGUAGE: English

AB Hyaluronic acid (HA) oligosaccharides have shown profound antimetastatic activity in a B16F10 mouse melanoma model. To develop mimetic compds. for hyaluronic acid oligosaccharides that should be resistant to enzymic degradation and may serve as candidates for antimetastatic drugs in the treatment of cancer, the C-/O-linked HA tetrasaccharide mimetics, beta-D-GlcNAc-(1,4)-beta-D-GlcA-(1,3)-beta-D-GlcNAc-(1,4)-beta-D-GlcA, in which the (1,4)-linkages are CH2-linked and (1,3)-linkage is O-linked, were designed and synthesized. Construction of the target mols. were obtained through the trichloroacetimidate glycosylation of two specifically protected C-disaccharides as building blocks, which were obtained by the C-coupling reactions of the glycosylstannane and glycosyl pyridylsulfone with an aldehyde, promoted by MeLi/BuLi and SmI2, resp. (Supported in part by NIH grant number CA71584.).

L41 ANSWER 6 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:186252 CAPLUS

TITLE: Synthesis of an S-/O-linked tetrasaccharide related to hyaluronic acid (HA)

AUTHOR(S): Yang, Qiang; Ren, Zhong-Xu; Welch, Karen T.; Baker, David C.

CORPORATE SOURCE: Department of Chemistry, University of Tennessee, Knoxville, TN, 37996, USA

SOURCE: Abstracts of Papers, 223rd ACS National Meeting, Orlando, FL, United States, April 7-11, 2002 (2002), CARB-007. American Chemical Society: Washington, D. C.
CODEN: 69CKQP

DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English
AB In an effort to develop mimetics for the natural HA oligosaccharides that will be resistant to degradation by hydrolases in the body and retain profound antimetastatic activity, e.g., in a B16F10 mouse model of melanoma, we have designed and synthesized an S-/O-linked tetrasaccharide mimetic of GlcNAc-(1,4)-GlcA-(1,3)-GlcNAc-(1,4)-GlcA, where the (1,4)-linkage is S-linked and the (1,3)-linkage is O-linked as shown below. (Supported in part by NIH grant number

L41 ANSWER 7 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2001:68553 CAPLUS
DOCUMENT NUMBER: 134:262794
TITLE: Active Site of Chondroitin AC Lyase Revealed by the Structure of Enzyme-Oligosaccharide Complexes and Mutagenesis
AUTHOR(S): Huang, Weijun; Boju, Lorena; Tkalec, Lydia; Su, Hongsheng; Yang, Hyun-Ok; Gunay, Nur Sibel; Linhardt, Robert J.; Kim, Yeong Shik; Matte, Allan; Cygler, Miroslaw
CORPORATE SOURCE: Biotechnology Research Institute, Montreal, QC, H4P 2R2, Can.
SOURCE: Biochemistry (2001), 40(8), 2359-2372
CODEN: BICHAW; ISSN: 0006-2960
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The crystal structures of Flavobacterium heparinium chondroitin AC lyase (chondroitinase AC; E.C. 4.2.2.5) bound to dermatan sulfate hexasaccharide (DShexa), tetrasaccharide (DStetra), and hyaluronic acid tetrasaccharide (HAtetra) have been refined at 2.0, 2.0, and 2.1 Å resolution, resp. The structure of the Tyr234Phe mutant of AC lyase bound to a chondroitin sulfate tetrasaccharide (CStetra) has also been determined to 2.3 Å resolution For each of these complexes, four (DShexa and CStetra) or two (DStetra and HAtetra) ordered sugars are visible in electron d. maps. The lyase AC DShexa and CStetra complexes reveal binding at four subsites, -2, -1, +1, and +2, within a narrow and shallow protein channel. We suggest that subsites -2 and -1 together represent the substrate recognition area, +1 is the catalytic subsite and +1 and +2 together represent the product release area. The putative catalytic site is located between the substrate recognition area and the product release area, carrying out catalysis at the +1 subsite. Four residues near the catalytic site, His225, Tyr234, Arg288, and Glu371 together form a catalytic tetrad. The mutations His225Ala, Tyr234Phe, Arg288Ala, and Arg292Ala, revealed residual activity for only the Arg292Ala mutant. Structural data indicate that Arg292 is primarily involved in recognition of the N-acetyl and sulfate moieties of galactosamine, but does not participate directly in catalysis. Candidates for the general base, removing the proton attached to C-5 of the glucuronic acid at the +1 subsite, are Tyr234, which could be transiently deprotonated during catalysis, or His225. Tyrosine 234 is a candidate to protonate the leaving group. Arginine 288 likely contributes to charge neutralization and stabilization of the enolate anion intermediate during catalysis.
REFERENCE COUNT: 56 THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 8 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1999:419618 CAPLUS
DOCUMENT NUMBER: 131:45032
TITLE: Structural study of hyaluronic acid oligomers and their complexes with copper in water by NMR and IR and molecular dynamics calculations
AUTHOR(S): Marchettini, Nadia; Barbucci, Rolando; Bonechi,

Claudia; Donati, Alessandro; Magnani, Agnese; Niccolucci, Valentina; Tiezzi, Enzo

CORPORATE SOURCE: Dep. Chemical Biosystems Sciences, Univ. Siena, Siena, I-53100, Italy

SOURCE: Macromolecular Symposia (1999), 138(Polymer-Solvent Complexes and Intercalates II), 203-208
CODEN: MSYMEC; ISSN: 1022-1360

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A symposium on studies on the hexa- and tetrasaccharide oligomers of hyaluronic acid by high-resolution 1H- and 13C NMR. The dynamic behavior of the mols. and their complexation with Cu(II) were analyzed by 1H-NMR relaxation studies. A specific site for the complexation of the tetrasaccharide with Cu2+ was demonstrated by anal. of the paramagnetic effect of the metal on non-selective proton relaxation rates. A model for the complex involving 2 mols. of the tetrasaccharide is proposed.

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 9 OF 38 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:75824 CAPLUS

DOCUMENT NUMBER: 126:183048

TITLE: Exploration of the action pattern of Streptomyces hyaluronate lyase using high-resolution capillary electrophoresis

AUTHOR(S): Park, Youmie; Cho, Seonho; Linhardt, Robert J.

CORPORATE SOURCE: Division of Medicinal and Natural Products Chemistry, College of Pharmacy and Department of Chemical and Biochemical Engineering, College of Engineering, University of Iowa, Iowa City, USA

SOURCE: Biochimica et Biophysica Acta, Protein Structure and Molecular Enzymology (1997), 1337(2), 217-226
CODEN: BBAEDZ; ISSN: 0167-4838

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Hyaluronic acid was treated exhaustively with a hyaluronate lyase (hyaluronidase, EC 4.2.2.1) from Streptomyces hyalurolyticus to obtain a tetrasaccharide and a hexasaccharide product in a molar ratio of 1 to 1.2. The tetrasaccharide product was fluorescently labeled at the reducing end by reductive amination with 7-amino 1,3-naphthalene disulfonic acid (AGA) and the structure of the conjugate was determined spectroscopically. Partial treatments of hyaluronic acid with hyaluronate lyase afforded complex mixts. of oligosaccharides that were similarly fluorescently labeled. These labeled oligosaccharide mixts. were analyzed using high-resolution capillary electrophoresis. The resulting electropherograms showed the content of each hyaluronic acid derived oligosaccharide, having a ds.p. (dp) from 4 to 50, throughout the enzymic reaction. Computer simulation studies gave comparable kinetic profiles suggesting that hyaluronate lyase exhibits a random endolytic action pattern. Interestingly, oligosaccharides of certain size (dp) were under-represented in these oligosaccharide mixts. suggesting that linkages at spacings of 10 to 12 saccharide units are somewhat resistant to this enzyme. The cause of this resistance might be the result of secondary or higher order structural features present in the hyaluronic acid polymer.

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=> d his

     (FILE 'HOME' ENTERED AT 10:55:07 ON 08 NOV 2007)

     FILE 'CAPLUS, MEDLINE' ENTERED AT 10:55:27 ON 08 NOV 2007
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L2             0 S NERVE DAMAGE (P) HYALURONIC ACID? (P) OLIGOSACCHARIDE?
L3             0 S NERVE DAMAGE (P) HYALURONIC ACID? (P) TETRAOLIGOSACCHARIDE?
L4             0 S NERVE DAMAGE (P) HYALURONIC ACID? (P) ?OLIGOSACCHARIDE?
L5             1 S NERVE DAMAGE (P) HYALURONIC ACID? (P) ?DISACCHARIDE?
L6             0 S NERVE DAMAGE (P) HYALURONIC ACID? (P) ?SACCHARIDE?  TETRA?
L7             1 S NERVE DAMAGE (P) HYALURONIC ACID? (P) ?SACCHARIDE? (P) TETRA?
L8             1 S NERVE DAMAGE (P) HYALURONATE (P) ?OLIGOSACCHARIDE?
L9             0 S NERVE DAMAGE (P) HYALURONATE (P) ?TETRA?
L10            1 S NERVE (P) HYALURONIC ACID? (P) TETRASACCHARIDE?
L11            6 S NERVE (P) HYALURONIC ACID? (P) OLIGOSACCHARIDE?
L12            2 S NERVE (P) HYALURONIC ACID? (P) ?OLIGOSACCHARIDE? (P) ?TETRA?
L13            3 S NERVE (P) HYALURONIC ACID? (P) ?SACCHARIDE? (P) ?TETRA?
L14            6 S NERVE (P) HYALURONIC ACID? (P) ?OLIGOSACCHARIDE?
L15            3 S NERVE (P) HYALURONATE (P) ?OLIGOSACCHARIDE?
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L18            5 S NERVE (P) HYALURONAN (P) ?SACCHARIDE?
L19            3 S L18 NOT L17
L20            0 S NERVE (P) HYALURONAN (P) ?TETRASACCHARIDE?
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L25            0 S NERVOUS FUNCTION (P) HYALURONIC ACID? (P) ?SACCHARIDE?
L26            0 S DEMYELINATION? (P) HYALURONIC ACID? (P) ?SACCHARIDE?
L27            2 S ?MYELINATION? (P) HYALURONIC ACID? (P) ?SACCHARIDE?
L28           27 S ?EDEMA? (P) HYALURONIC ACID? (P) ?SACCHARIDE?
L29           17 S EDEMA? (P) HYALURONIC ACID? (P) ?SACCHARIDE?
L30            0 S L29 AND WHITE MATTER?
L31           10 S L28 NOT L29
L32            0 S PREPARATION (P) HYALURONIC ACID? (P) ?TETRASACCHARIDE?
L33            0 S MANUFACT? (P) HYALURONIC ACID? (P) ?TETRASACCHARIDE?
L34            0 S MANUFACT? (P) HYALURONIC ACID? (P) ?TETRAOLIGOSACCHARIDE?
L35            0 S AQUEOUS? (P) HYALURONIC ACID? (P) ?TETRASACCHARIDE?
L36            1 S SOLUTION? (P) HYALURONIC ACID? (P) ?TETRASACCHARIDE?
L37            1 S HYALURONIC ACID? (P) ?TETRASACCHARIDE?  (P) PHARMA?
L38           39 S HYALURONIC ACID? (S) ?TETRASACCHARIDE?
L39            1 S L38 AND SOLUTION?
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L42            0 S L41 AND SOLVENT?
L43            0 S L41 AND AQUEOUS
L44            0 S L41 AND ETHANOL
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